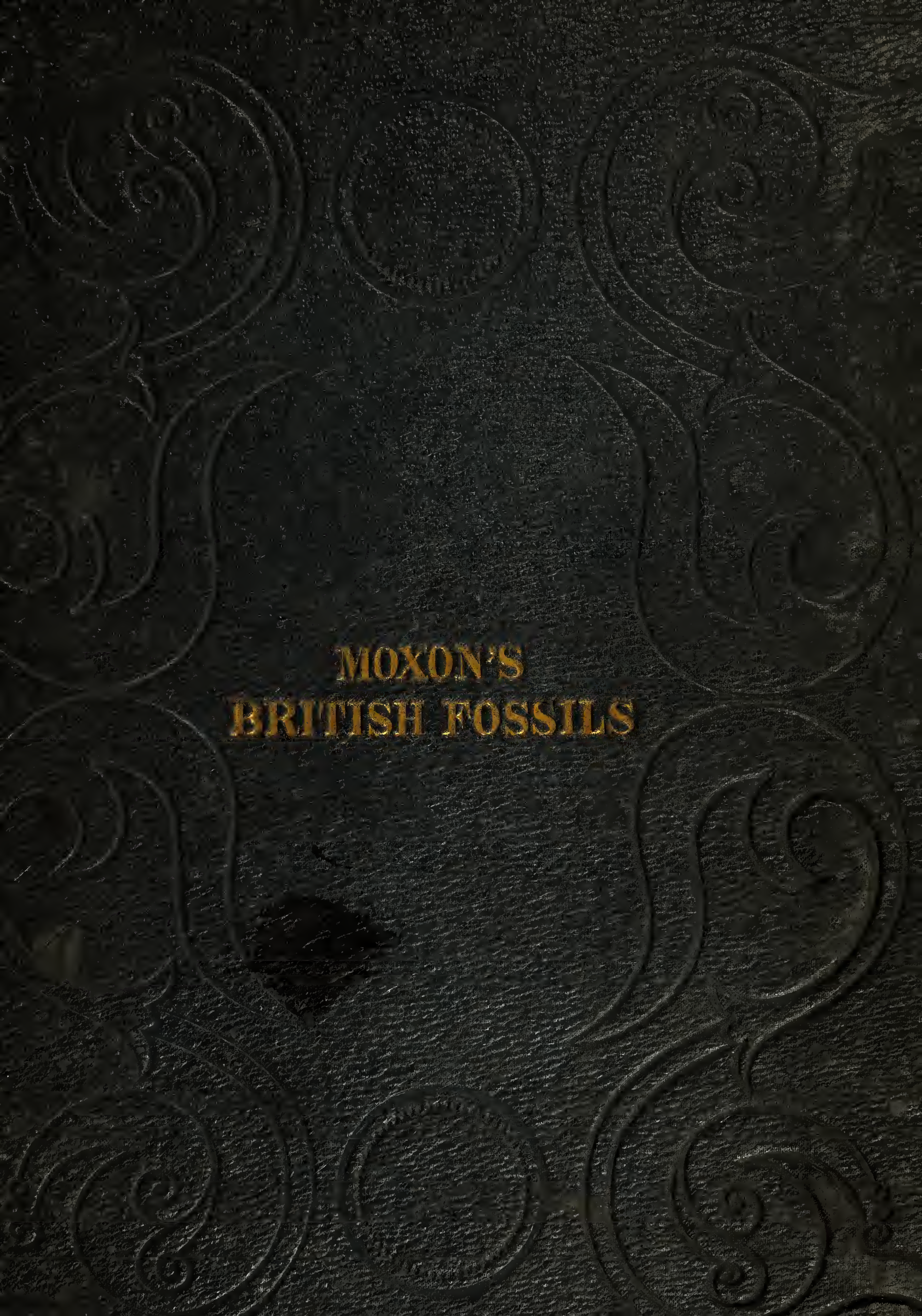

MOXON'S BRITISH FOSSILS

37863/B

Octavius Browne.

Octavius Browne
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ILLUSTRATIONS
OF THE
CHARACTERISTIC FOSSILS
OF
BRITISH STRATA,
(comprising 340 *Figures;)*

TO WHICH ARE ADDED,

EXPLANATORY NOTES

Of the nature and origin of the Strata; Numerical Estimates of Contents; References; and Indices,
Alphabetic and according to the Strata;

BY

CHARLES MOXON,

Hon. Curator of the Scientific Society of London; Author of "an Introduction to Mineralogy, &c."

London;
H. Baillière, 219, Regent Street; J. Tennant, (successor to Mawe) 149 Strand,
near Somerset House; E. Ramsden, Finch Lane, Cornhill; and by order of
all booksellers.

1841.

H. YOUD, PRINTER, 62, TOTTENHAM COURT ROAD.

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TO

GEORGE BELLAS GREENOUGH, ESQ., F.R.S., F.G.S.

(President of the Royal Geographical Society, &c. &c.)

AS AN HUMBLE

RETURN FOR THE MANY ADVANTAGES, AND KIND

ATTENTIONS RECEIVED AT HIS HANDS,

BY THE

AUTHOR.

Leyton, Essex, August 2, 1841.

INDEX OF GENERA & SPECIES.

CONCHIFERA, MOLLUSCA, &c.

		PL.	FIG.
Ampullaria patula	London clay	9	4
Do. -	Hants Beds	9a	1 2
Ananchites fistulosa	Gravel	3	1,2,3
Anomia - -	Brickearth	2	9
Ancillaria - -	London clay	9	14
Arca carinata -	Greensand	16	9
tumida -	Red sand stone	25	6
? - -	Lias	23	8
Asterias lunatus -	Chalk	10	1
Astarte plana -	Crag	5	5
antiquata -	Crag	5	9
Avicula ovalis -	Oolite	21	3
inequivalvis	do	do	4
do. -	Lias	23	10
Axinus obscurus -	Red sand stone	25	5
Ammonites maculatus	Blue clay	4	7
varians -	Chalk	13	1
undatus -	do.	do	2
sulcatus	do.	do	3
curvatus -	do.	do	4
cinctus -	do.	do	5
navicularis -	do.	do	6
rusticus -	do.	do	7
alternatus -	Ch: Marl	14	10
Mantelli -	do,	do	11
planulatus -	Greensand	17	4
catillus -	do,	do	5
auritus -	do,	do	6
inflatus -	do,	do	7
splendens -	Gault	18	8
lautus -	do,	do	9
tuberculatus	do,	do	10
Kœnigi -	Oolite	22	7
striatulus -	do,	do	8
annulatus -	do,	do	9
discus -	do,	do	10
quadratus -	do,	do	11
Parkinsoni -	do,	do	12
læviusculus -	do,	do	13
corrugatus -	do,	do	14
falcifer -	do,	do	15
Calloviensis -	do,	do	16
heterophyllus	Lias	24	1
fibulatus -	do,	24	2
communis -	do,	24	3
Bucklandii -	do,	24	4
Murleyii -	do,	24	6
Buckmanii -	do,	24	5
Listeri -	Coal	26	7
sphæricus -	do,	26	8
Balanus balanoides -	Crag	5	1

		PL.	FIG.
Belemnites minimus	Brickearth	2	10
do, -	Chalk marl	14	7
do, -	Gault	18	6
mucronatus -	Chalk	12	8
do, -	Chalk marl	do	6
granulatus -	Chalk	12	9
abbreviatus -	Oolite	22	3
elongatus -	do	22	4
compressus -	do	22	5
ovalis -	Lias	23	10
Bellerophon apertus -	Coal	26	5
tenuifascia -	Grouwacke	28	8
Buccinum granulatum	Brickearth	2	4
Cardium - -	Gravel	4	4
edule -	Crag	5	11
plumstedianum	Plastic Clay	7	6
truncatum -	Lias	23	5
Cancellaria quadrata -	Hants beds	9a	9, 10
Cerithium punctatum	Crag	5	26
funatum -	Hants beds	9a	3
Cidarite - -	Gravel	3	5
Cirrus perspectivus -	Chalk	12	5
depressus -	do	do	6
plicatus -	Gault	18	5
Conus Dormitor -	Hants beds	9a	11
Cucullœa glabra -	Greensand	16	10
Cyclas cornea -	Silt	1	1
amnica -	do	1	2
membranacea	Wealden	19	1
media -	Wealden	do	2
Dianchora spinosum -	Chalk	10	13
Dolium nodosum -	do	12	7
Erycina complanata -	Gravel	3	10
Euomphalus - -			
cristatus -	Blue clay	4	9
rugosus -	Carb. limest.	27	11
catillus -	Grouwacke	28	7
Exogyra conica -	Greensand	15	6
Fusus striatus -	Crag	6	9, 10,11
Galerites vulgaris -	Chalk	10	3, 6
Gervillia aviculoides -	Greensand	15	12
Do. - -	Oolite	21	5
solenoides -	Greensand	16	1
Gryphœa minuta -	Gravel	3	8
Do. -	Oolite	20	8
globosa -	Chalk	11	5
dilatata -	Oolite	20	6
incurva -	do	20	7
do. -	Lias	23	4
Hamites plicatilis -	Chalk	13	8
compressus -	do	do	9

		PL.	FIG.
maximus	Gault	18	11
rotundus	do	do	12
spiniger -	do	do	13
Helicina expansa -	Lias	23	6
Helix nemoralis -	Silt	1	13
hortensis	do	do	14
crystallina -	do	do	18
Hippopodium ponderosum -	Oolite	21	12
divaricatum	Lias	23	9
Inoceramus Cuvieri	Chalk	do	3
mytiloides -	do	12	4
concentricus	Gault	18	3
Lima elegans -	Blue clay	4	5
rudis	Chalkmarl	14	5
do. -	Oolite	21	1
proboscidea	do.	do	2
Littorina littorea	Crag	5	28
Lymnea auricularia	Silt	1	9
palustris -	do.	do	10
fragilis	do.	do	11
stagnalis	do.	do	12
Mactra Listeri -	Crag	5	2
cuneata -	do.	5	8
magna	do.	5	3 7
Magas pumilus	Chalk	12	1
truncata -	do.	11	13
Melania sulcata	London clay	9	11
lineata	Hants beds	9a	4
striata -	Oolite	22	1
Melanopsis carinata	Wealden	19	7
Murex punctatus	Crag	5	20
elongatus	do.	6	1
augulatus	do.	6	2
lapilliformis	do.	6	3 5
compressus	do.	6	6
pullus -	do.	6	7
Modiola elegans	Gravel	3	6
equalis	Greensand	16	3
tripartita	do.	16	4
plicata	Oolite	21	7
Mysca pictorum	Silt	1	3
Mytilus edulis -	do	do	19
lanceolatus	Greensand	16	2
Natica glaucina	Brickearth	2	6
do. -	Crag	5	27
patula -	London clay	8	3
Nautilus imperialis	do.	9	15
elegans	Chalk	12	10
inæqualis	Gault	18	7
lineatus -	Oolite	22	6

		PL.	FIG
pentagonus	Red sandstone	25	6
Neritina fluviatilis	Silt	1	15
Nucula oblonga	Crag	5	10
variabilis	Oolite	21	do
antiquata	Greensand	16	7
pectinata	Gault	18	21
Palma -	Carb limestone	27	10
Nummulites	Bagshot sand	7	1 2
Oliva Branderi	London clay	9	13
Ostrea edulis	Silt	1	20
do. (v. antiq.)	Brickearth	2	7 8
pulchra	Plastic clay	7	4
do. -	London clay	8	3
edulina	do.	8	2
inequicostata	Chalk	11	2
concentrica	do.	do	3
triangularis	do.	do	4
carinata	Greensand	15	5
gregarea	Oolite	20	4
acuminata	do.	20	5
Orthoceras Steinhaueri	Coal	26	6
undulatus	CarbLimestone	27	13
circularis	Grouwacke	28	9
Paludina impura -	Silt	1	8
media	Crag	5	15
rotundata	do.	5	16
vivipara	Wealden	19	8 10
elongata	do.	do	11
caranifera	do.	do	12
Patella parvula -	Crag	5	17
Pectunculus brevirostris	London clay	8	5 6
sublœvis	Greensand	16	8
minimus	Oolite	21	11
Pecten plebeius -	Crag	5	14
concentricus	Chalk	10	9 10
granulosum	do.	do	11
sexcostatus	do	10	14,15
orbicularis	Greensand	15	8
qaadricostata	do.	do	9
asper	do.	15	10
do	Gault	18	2
obliquus	Greensand	15	11
vagans	Oolite	20	9
papyraceus	Coal	22	1
Pentamerus Knightii	Grouwacke	28	do
Pholas crispata -	Blue clay	4	8
Pinna affinis -	London clay	8	1
sulcata	Chalk	11	do
lanceolata	Oolite	21	6
Planorbis cornea -	Silt	1	4

		PL.	FIG.
carinatus	Silt	1	5
vortex	do.	do	6
contortus	do.	do	7
Plagiostoma spinosum	Chalk	10	12
rigidum	Oolite	20	10
cardiiforme	do.	20	11
Planulites	Plastic clay	7	7 8
Producta lobata	Grouwacke	28	6
concinna	do.	28	5
aculeata	Red sandstone	25	3
calva -	do.	25	4
antiquata	Carb limestone	27	8
gigantea	do.	27	9
Ringicula ventricosa	Crag	5	21
Rostellaria PesPelecani	Brickearth	2	1 2
rinasci	London clay	9	10
rimosa	Hants beds	9a	6
Scalaria graulandica	Crag	5	22
Serpula antiquata	Chalkmarl	14	9
do.	Greensand	15	1
rustica	do.	do	2
articulata	do.	do	3
tricarinata	Oolite	20	1
compressa	Carb. Limest.	27	do
Scutella hemispherica	Chalk	10	2
do. -	Chalkmarl	14	8
depressa	Chalk	10	3
Spatangus excentricus -	Gravel	3	4
cordiformis	Chalk	10	5
rostratus	do.	do	7
coranguinum	do.	do	8
Sphæra corrugata	Greensand	15	7
Spirifer Walcottii	Lias	23	1
undulatus	Red sandstone	25	2
ambigua	Carb. Lime	27	2
triangularis	do.	27	3
striatus	do.	27	4
cuspidatus	do.	27	5
lineatus	Grouwacke	28	2
octoplicatus	do.	28	3
Succinea amphibea	Silt	1	6
Tellina solidula	do.	1	21
do. -	Crag	5	4
prætenuis	do.	5	6
inequalis	Greensand	17	2
Terebratula psittacea	Crag	5	2
gallina	Chalk	11	6 7
subundata	do.	do	8 9
pentangulata	do.	do	10
lentiformis	do.	do	11

		PL.	FIG.
Terebratula ovalis	Chalk	11	12
undata	Chalkmarl	14	1 2
rotundata	Do.	do	3
biplicata	Greensand	15	4
globosa	Oolite	20	2
ornithocephala	do.	20	3
resupina	Lias	23	2
tetraeda	do.	23	3
perovalis	Red sand stone	25	1
crumena	Carb. Limest.	27	6
Fimbria	do.	27	7
pugnus	Grouwacke	28	4
Trigona dædalia	Greensand	16	5
alœformis	do.	do	6
costata	Oolite	21	8
gibbosa	do.	do	9
Trochus nitens	Crag	5	23
punctatus	Oolite	22	2
similis	Lias	23	13
Turbo littoreus	Brickearth	2	5
bicarinatus	Crag	5	18
elongatus	do.	5	19
ornatus	Red sandstone	25	7
Tiara	Carb. Lime	27	12
Turritella terebra	Brickearth	2	3
do.	Plastic clay	7	3
do.	Hants beds	9a	5
incrassata	Crag	5	24
conoidea	London clay	9	12
elongata	Coal	26	4
Unio porrectus	Wealden	19	3
compressus	do.	do	4
antiquus	do.	do	5
aduncus	do.	do	6
uniformis	Coal	26	2
subconstrictus	do.	26	3
Valvata obtusa	Silt	1	17
Venericardia planicostata -	London clay	8	4
Venus (?)	Gravel	3	7
Venus (?)	Blue clay	4	6
paphia	Crag	5	13
meroe	London clay	9	1 2
augulata	Greensand	17	1
Vermetus polygonatus	Greensand	do	3
Voluta spinosa	London clay	9	5
hirtata	do.	9	6
Voluta depauperata	London clay	9	7
crenulata	do.	9	8
ambigua	do.	9	9
Lamberti	Hants beds	9a	7
Vulsella	Plastic clay	7	5

PLANTÆ.

Odontopteris Brardii	Coal beds.	29	1	Asterophyllites foliosa	Coal beds	30	3
Lonchopteris Bricii	do.	do	2	Cyclopteris orbicularis	do.	do	4
Neuropteris gigantea	do.	do	3	Lepidodendron (stem of)	do.	do	5
Aspidium ?	do.	do	4	Sigillaria pachyderma	do.	do	6
Pecopteris lonchitica	do.	do	5	reniformis	do.	do	7
Sphenopteris artemisifolia	do	do	6	Flustra quadrata	Gravel	4	1
Sphenophyllum Schlotheimii	do.	30	1	foliacea	Gravel	4	2
Pterophyllum comptum	do.	do	2				

MAMMALIA—REPTILIA—PISCES.

Under jaw and teeth of Megalosaurus	Tilgate beds	31	1
Portion of a rib of the same	do.	do.	2
Teeth of the Iguanodon	do.	do.	3, 4
Nasal horn of same	do.	do.	5
Plesiosaurus	Lias	do.	6
Ichthyosaurus communis	do.	32	1
Do. intermedius	do.	do.	2
Tooth of the Ichthyosaurus	do.	do.	3
Coprolites (Ichtheo-coprolites)	do.	do.	4, 5
Palæothrissum macrocephalum	Mount lime	33	1
Dipterus macropygopterus	Secondary rocks	do.	2
Fossil fish (genus not determined)	do.	34	1
Dipterus brachypygopterus	do.	do.	3

SECTION I.

CONCHIFERA, MOLLUSCA, &c.

PLATES I TO XXVIII.

INTRODUCTION.

The Student of the Theory of Geology,—for to him I will more particularly address these notes, and the accompanying plates,—often finds great difficulty in distinguishing those fossils which he meets with even in the most cursory examination of any stratified formations; the knowledge which he gleans from the perusal of any geological work proving insufficient, in too many instances, when applied to practical purposes. It is therefore my intention to offer these plates, as his guide to the fossils which he finds described in any of those works, as common in any stratification, or peculiar to them, provided their occurence is so frequent as to bring them under the observation of the painstaking student, without more than usually careful search.

This leads me to consider the definition of the term "characteristic" which I have applied to the fossils which are herein figured. I deem those only which the student may find with little pains in the Strata, or such as are common in the same in almost all positions, as those which are characteristic, avoiding all to which a more advanced geologist would assign the same term, on account of their having been found only once or seldom, and that in one particular stratum. An unique specimen, or one which is nearly so, cannot, I think, be considered as one of those fossils by which the student may characterize the nature of any stratum,—and in this respect I hope to have made the term perfectly intelligible.

Considering that the student has become acquainted with the classes and distinctions of animal and vegetable life, the annexed tables of the result of Geological investigations will afford some information as to the numerical estimate of Fossils which have been discovered, taking all localities into account, and their particular distribution ; no more detailed introduction to their merits is required, emanating as they do from such unquestionable authorities.

TABLE 1.—BROGNIART's ESTIMATE OF FOSSIL PLANTS, (1828.)

Class of Plants.	Fossil.	Recent.	
Agamia	27	7000	
Cryptogamia Cellulosa	2	1500	Or 1 fossil to 100 recent species.
,, ,, Vasculosa	266	1700	
Phænogamia gymospermia	57	150	
,, ,, monocotyledonea	49	8000	
,, ,, dicotyledonea	100	32000	
	501	50350	

TABLE 2.—PHILLIP's ESTIMATE OF FOSSIL ANIMALS (1830.)

	In Strata.	In sup. accumulations.	Living.	
Mammalia	35	109	1100	
,, ,, Cetacea	8			
Birds	few	few	5000	
Reptiles	71	—	2100	
Fishes	800	—	8000	
Insecta	74	—	100,000	Or 1 to 20.
Crustacea	104	—	500	
Annulosa	104	—	1000	
Cephalopoda	788	—	100	
Pteropoda	5	—	50	
Gasteropoda	880	—	3100	
Conchifera	2026	—	1790	
Tunicata		—		
Radiaria	278	—	1000	
Polypiaria	476	—	1000	
	6644	109	124,600	

And his summary of LAND and FRESH WATER PRODUCTIONS, (1836.)

Fossil Terrestrial Plants,	500	Fossil Terrestrial Animals,	330
,, Freshwater ,,	40	,, Freshwater ,,	260
,, Marine ,,	40	,, Marine ,,	6065

Having enumerated the Estimates of Fossil Productions, let us now consider their distribution, which is concisely shown by the following tables, from the Penny Cyclopædia, (article "Organic Remains.")

DISTRIBUTION OF THE CLASSES OF PLANTS, AND OF VERTEBRAL ANIMALS

Systems of Strata.	Agamia	Cryptogamia Cellulosa	Cryptogamia Vasculosa	Phænogamia Gymnospermia	Phænogamia Monocotyledonea	Phænogamia Dicotyledonea
Tertiary . .	*	*	*	*	*	*
Cretaceous .	*		*	*	*	
Oolitic . .	*		*	*	*	
Saliferous .	*		*	*	*	
Carboniferous.	*		*		*	
Palæozoic .	*		*			
Primary . .						

Systems of Strata.	Pisces	Amphibea	Reptilia	Aves	Mammalia
Tertiary . .	*	*	*	*	*
Cretaceous .	*		*		
Oolitic . .	*		*	*	*
Saliferous .	*		*		
Carboniferous	*				
Palæozoic .	*				
Primary . .					

DISTRIBUTION OF INVERTEBRAL ANIMALS.

Systems of Strata.	Polygastrica	Porifera	Polypifera	Acalephæ	Echinodermata	Entozoa	Rotifera	Cirrhopoda	Annelida	Myriapoda	Insecta	Arachnida	Crustacea	Tunicata	Conchifera	Gasteropoda	Pteropoda	Cephalopoda
Tertiary .	*	*	*		*		*	*	*	*	*	*	*		*	*	*	*
Cretaceous .	*	*	*		*			*	*				*		*	*		*
Oolitic . .		*	*		*				*		*		*		*	*		*
Saliferous .			*		*								*		*	*		*
Carboniferous			*		*						*	*	*		*	*		*
Palæozoic .			*		*								*		*	*		*
Primary . .																		

With these Tables, I will dismiss the subject of Universal distribution, and proceed with respect to British Strata.

Silt.

This name is given to modern deposits, whether originating from Marine or freshwater causes; their contents are therefore strictly MODERN, and have suffered little or no change in their external characteristics or appearance. These deposits vary with local circumstances, and not being considered as a stratification, in the common acceptation of this geological term, the observations which have been made as to its fossil contents, are merely local; I will therefore give a summary of the fossils from two localities where this deposit occurs.

Numerical Estimates of Contents.

1. Silt Deposit of Western Norfolk. Marine.
   PLANTÆ, 7. CONCHIFERA, 6. MOLLUSCA, 10. MAMMALIA, 7.
2. Silt Deposit of River Lea. Freshwater.
   CONCHIFERA, 5. MOLLUSCA, 14.

Index to Plate I.

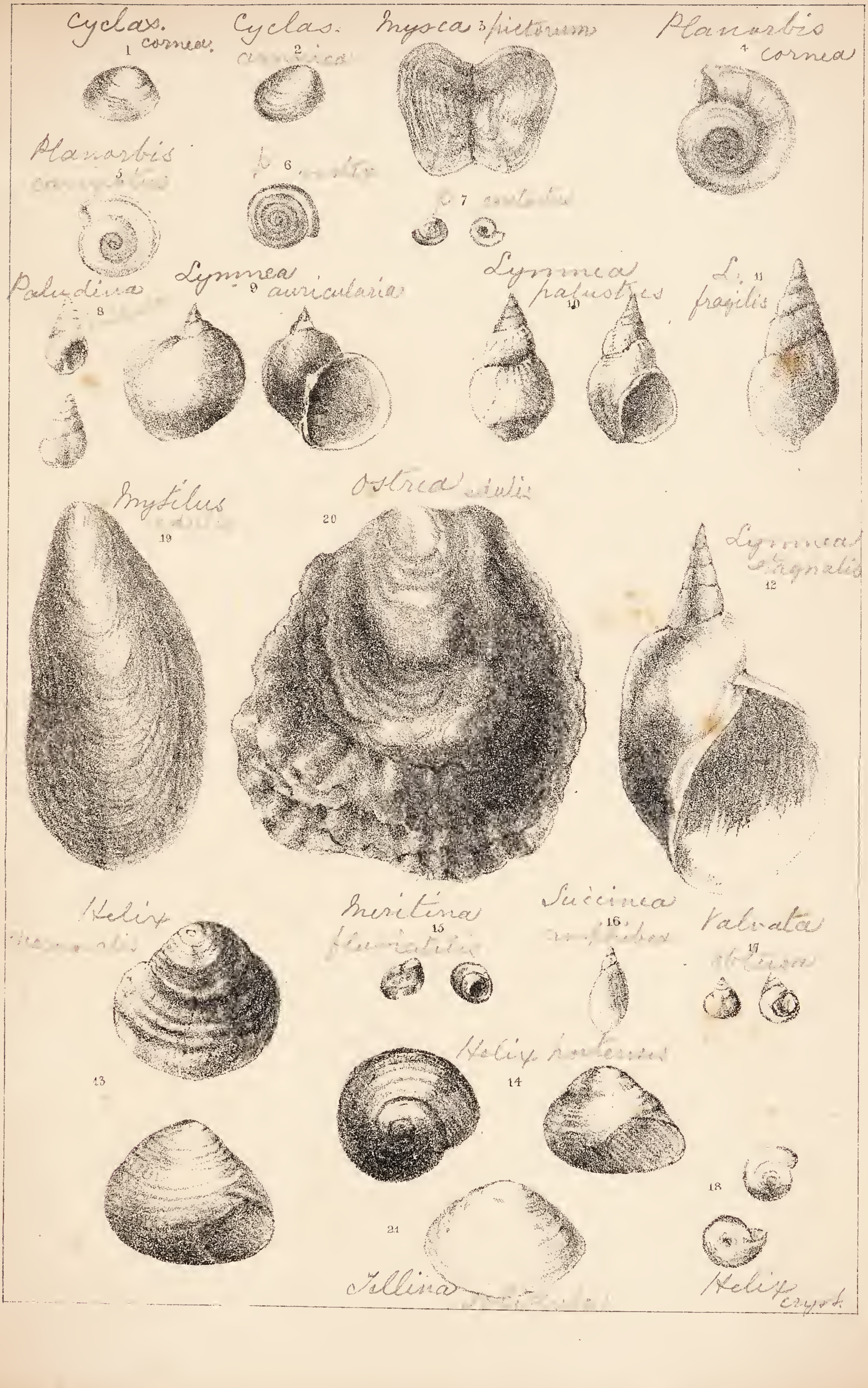
Figures of Marine Shells. Mytilus edulis, 19. Ostrea edulis, 20.
Tellina solidula, 21.

Figures of Freshwater Shells, &c. Cyclas cornea, 1. C. amnica, 2.
Mysca pictorum, 3. Planorbis cornea, 4. P. carinatus, 5.
P. vortex, 6. P. contortus, 7. Paludina impura, 8.
Lymnea auricularia, 9. L. palustris, 10. L. fragilis, 11.
L. stagnalis, 12. Helix nemoralis, 13. H. hortensis, 14.
H. crystallina, 18. Neritina fluviatilis, 15. Succinea amphibea 16.
Valvata obtusa, 17.

References.

Woodward's "Outline of the Geology of Norfolk" 8vo 1833, p. 11.
De la Beche's "Geological Manual"............. Do. p. 179.

SILT.


Cyclas cornea
1
Cyclas amnica
2
Mysca pictorum
3
Planorbis cornea
4
Planorbis
5
P 6 vortex
P 7 contortus
Paludina
8
Lymnea auricularia
9
Lymnea palustris
10
L. fragilis
11
Mytilus edulis
19
Ostrea edulis
20
Lymnea stagnalis
12
Helix nemoralis
13
Neritina fluviatilis
15
Succinea amphibia
16
Valvata obtusa
17
Helix hortensis
14
18
21
Tellina
Helix cryst.

Brick Earth.

This fossilliferous deposit occurs principally, if not solely, in the county of Norfolk, filling the valleys touching upon Lynn Bay, more especially that of the River Nar, (Brick Earth of Nar). It is a recent marine deposit, containing no boulders, and does not partake of any of the characters of the "drift" so generally spread over the regular formations. Most of its fossil shells are common at the present time on the Norfolk Coast, with the exception of the Rostellaria Pes Pelecani, (which is so abundant in this deposit, but has not been met with on the neighbouring coasts.)

Numerical Estimate of Contents.

		Species.		Species.	
CONCHIFERA.	Mactra	2	Ostrea	2	- 11
	Cardium	2	Mytilus	1	
	Pecten	1	Anomia	1	
	Tellina	1	Corbula	1	
MOLLUSCA,	Turritella	1	Rostellaria	1	- 8
	Turbo	1	Cerithium	1	
	Natica	1	Belemnites	1	—
	Buccinum	2			19

MAMMALIA.—Teeth of Horse and Ox. Vertebra and teeth of Elephas primigenius ; under tooth of lower-jaw of Rhinoceros, and antlers of Stag.

Index to Plate II.

Ostrea edulis, (var. antiquata) 7. 8. Anomia 9. Turritella terebra 3. Buccinum granulatum, 4. Turbo littoreus, 5. Natica glaucina, 6. Belemnites minimus 10.

References.

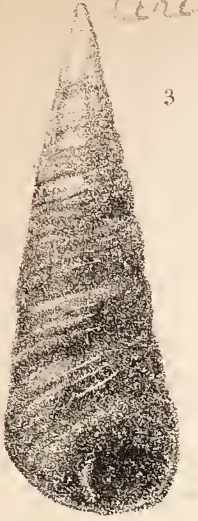
Woodward's "Outline of Geology of Norfolk" p. 11.....De la Beche's "Geological Manual" p. 119....Rose's "Sketch of the Geology of Western Norfolk"....London and Edinburgh Philosophical Mag. Jan. 1836. .."Proceedings of the Scientific Society of London" vol. 2, (1840).

PLATE. II.

BRICK EARTH.

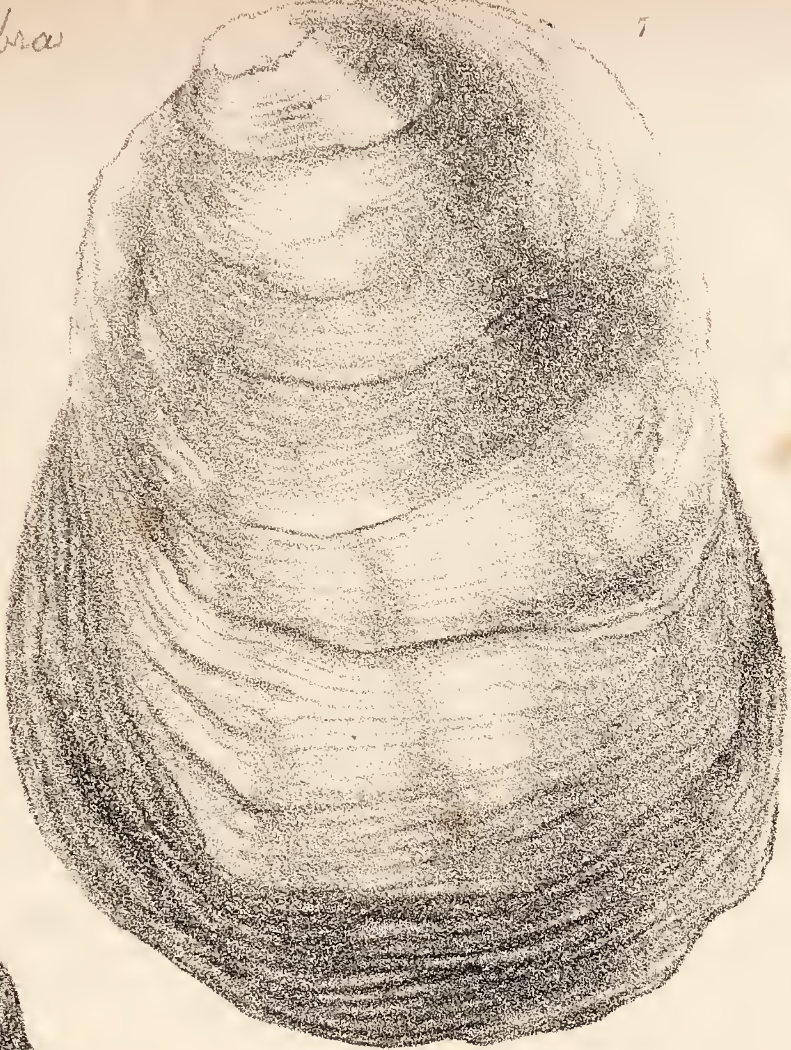
Turritella terebra

3



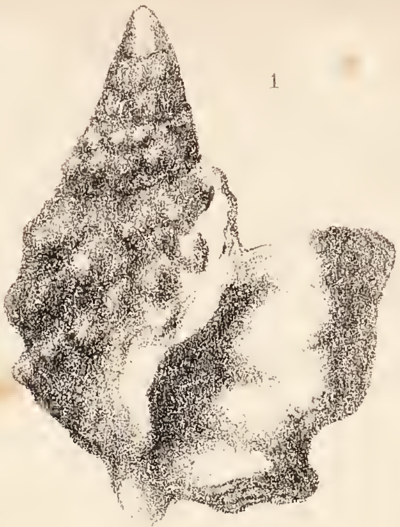
Ostrea edulis antiquata

7



Rostellaria pes pelicanis

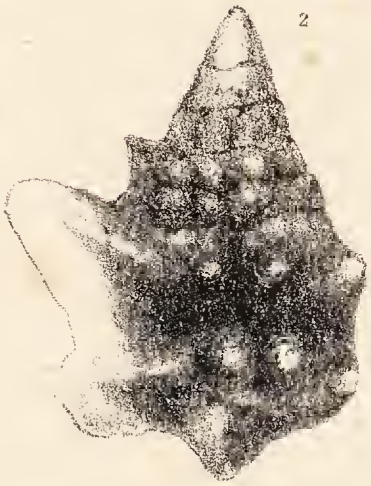
1



Buccinum?
granulatum

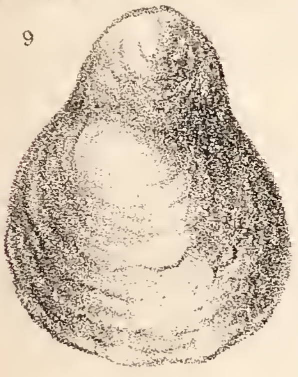
4

2



Anomia

9



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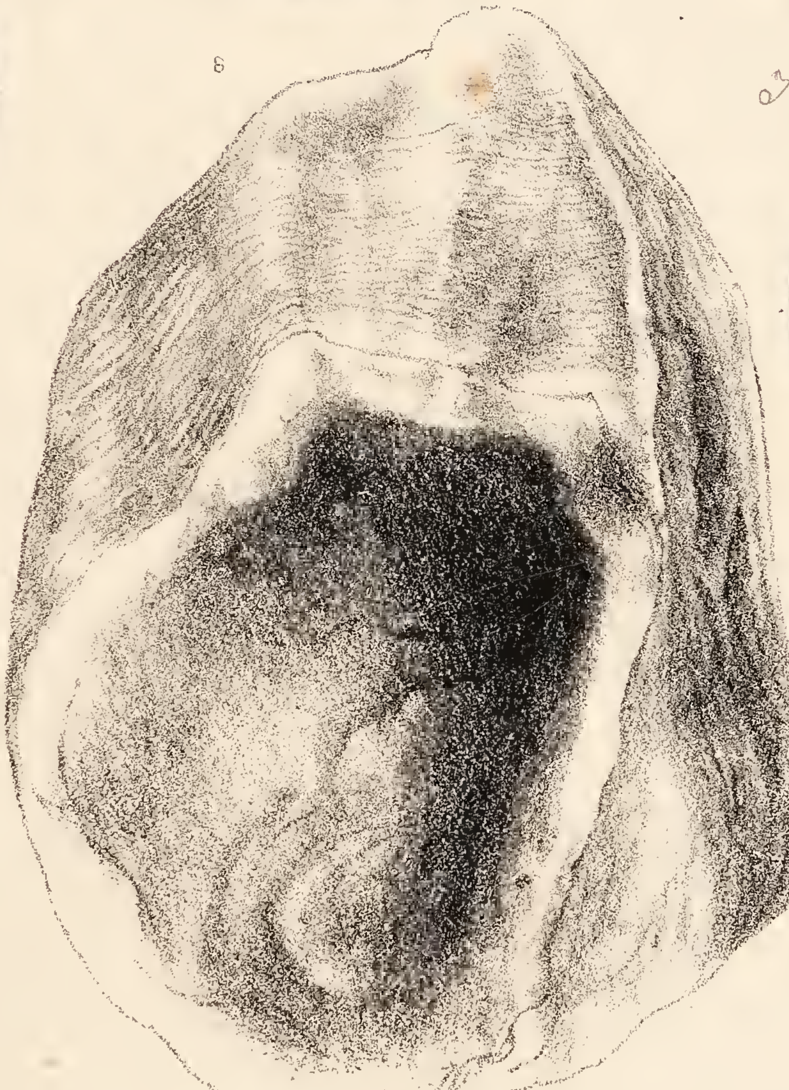
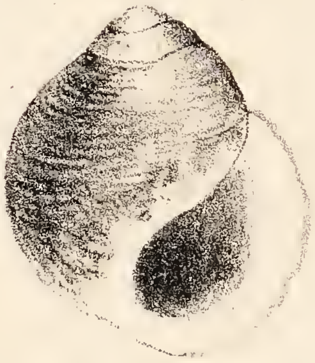
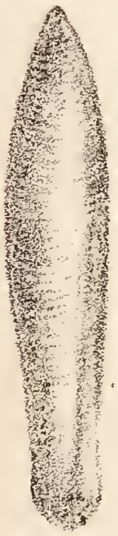


Turbo littoreus

5



Belemnites
10 minimus



Natica glaucina

6

Diluvial Gravel.

This WATER MOVED DEPOSIT forms a portion of De la Beche's "Erratic Block Group," which position has been assigned to it, on account of its origin. The fossils contained are those drifted with the "materiel" of the bed from its original localities, and although no fossil can be deemed peculiar to it, the constant occurrence of particular genera, affords some clue to its derivation, and proves a sufficient reason for their insertion in these plates.

Numerical Estimate of Contents.

Polypi	-	34	Conchifera	-	42
Radiaria	-	20	Mollusca	-	5
Annulata	-	1	Vermes	-	2
Cirripeda	-	1	Pisces	-	2

Index to Plates III & IV.

Ananchites fistulosa III, 1 2. Lower side of same III, 3. Spatangus excentricus 4, Impression of one of the five sections of a Spatangus, common in gravel of Kent and Norfolk IV, 3. Cidarite III, 5. Modiola elegans III, 6. Portion of a Venus (common) III, 7. Gryphœa minuta III, 8. Terebratula III, 9. Erycina complanata III, 10, Flustra quadrata IV, 1. F, foliacea IV, 2. Cardium IV, 4,

References.

De la Beche's Geo. Manual, p, 180. Woodward's "Geology of Norfolk" p. 36.

Blue Clay of Norfolk.

Like the preceding, is a water moved deposit, containing fossils drifted from the original situations of its materials.

Numerical Estimate of Contents.

Plantæ	4	Annulata	4	Pisces	3
Polypi	7	Conchifera	86	Sauria	3
Radiaria	2	Mollusca	47		

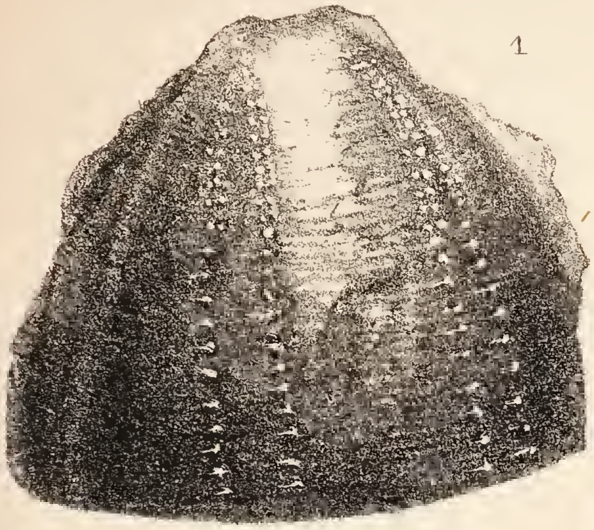
Index to Plate IV continued.

Lima elegans	5	Probably Venus ?	6	Ammonites Maculatus	7
		Pholas crispata	8	Euomphalus Cristatus	9

PLATE. III.

GRAVEL.

Ananchites fistulosa 1-2-3



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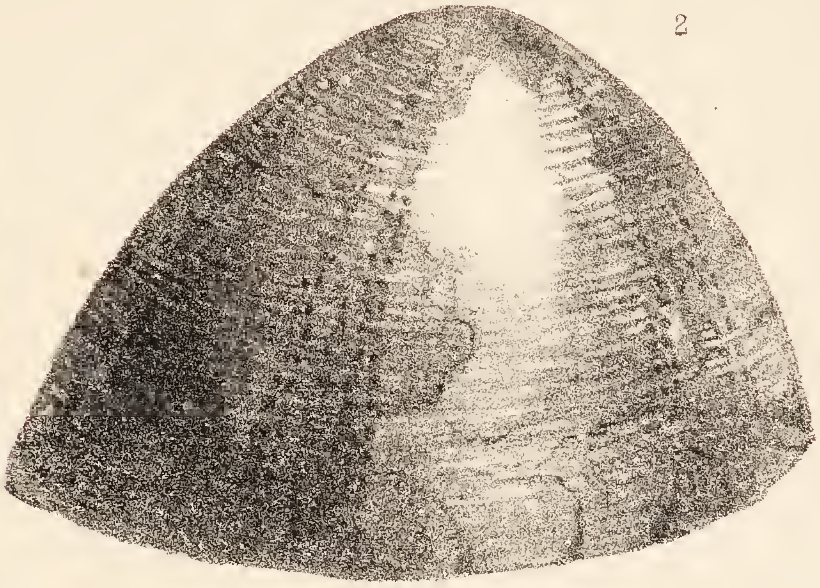
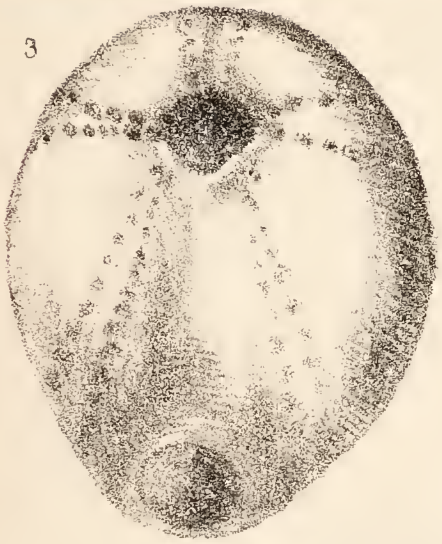
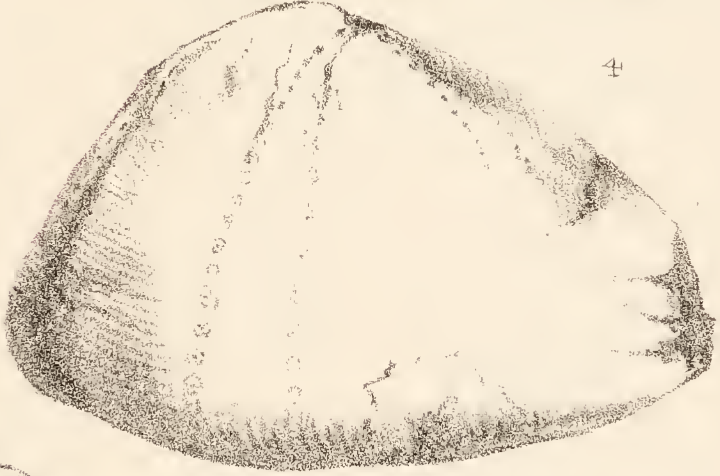


2



3

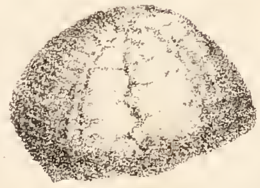
Spatangus excentricus



4

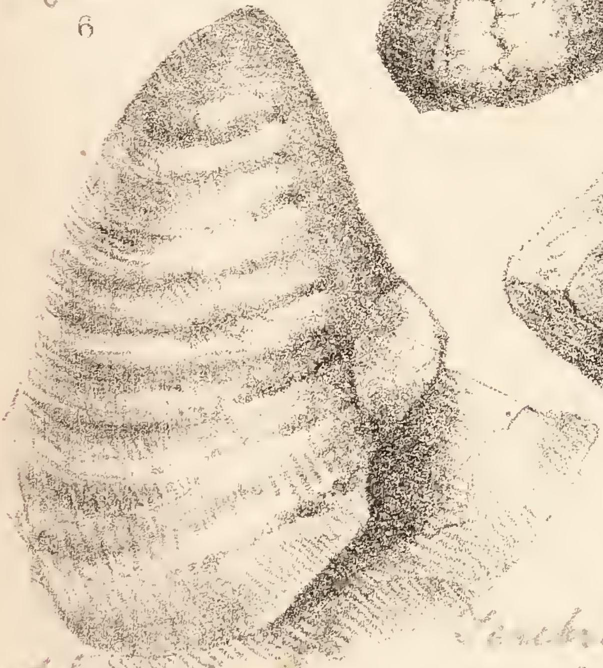
Cidarites

5



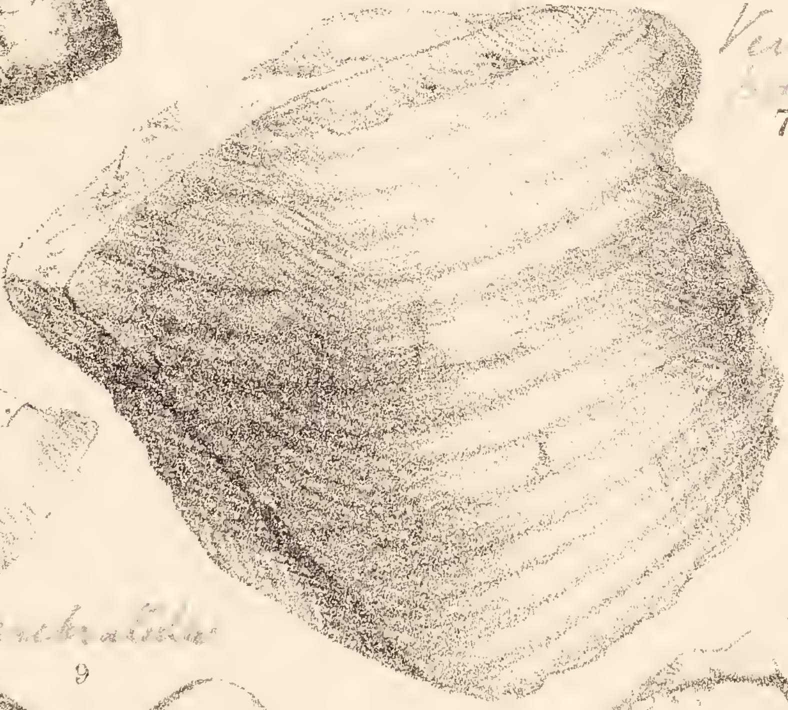
Modiola elegans

6



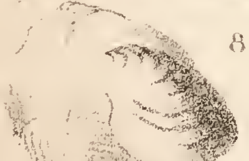
Venus [illegible]

7



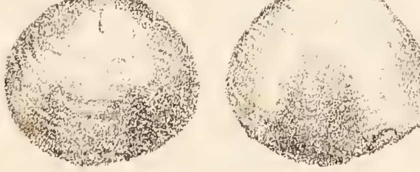
Gryphea inunata

8

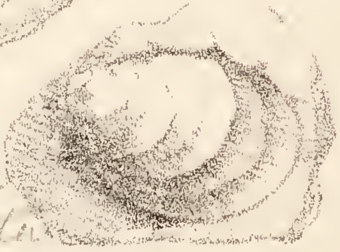


Terebratula

9



10

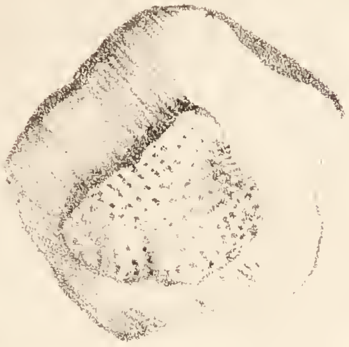


Erycina complanata

PLATE. IV. **GRAVEL. — CLAY.**

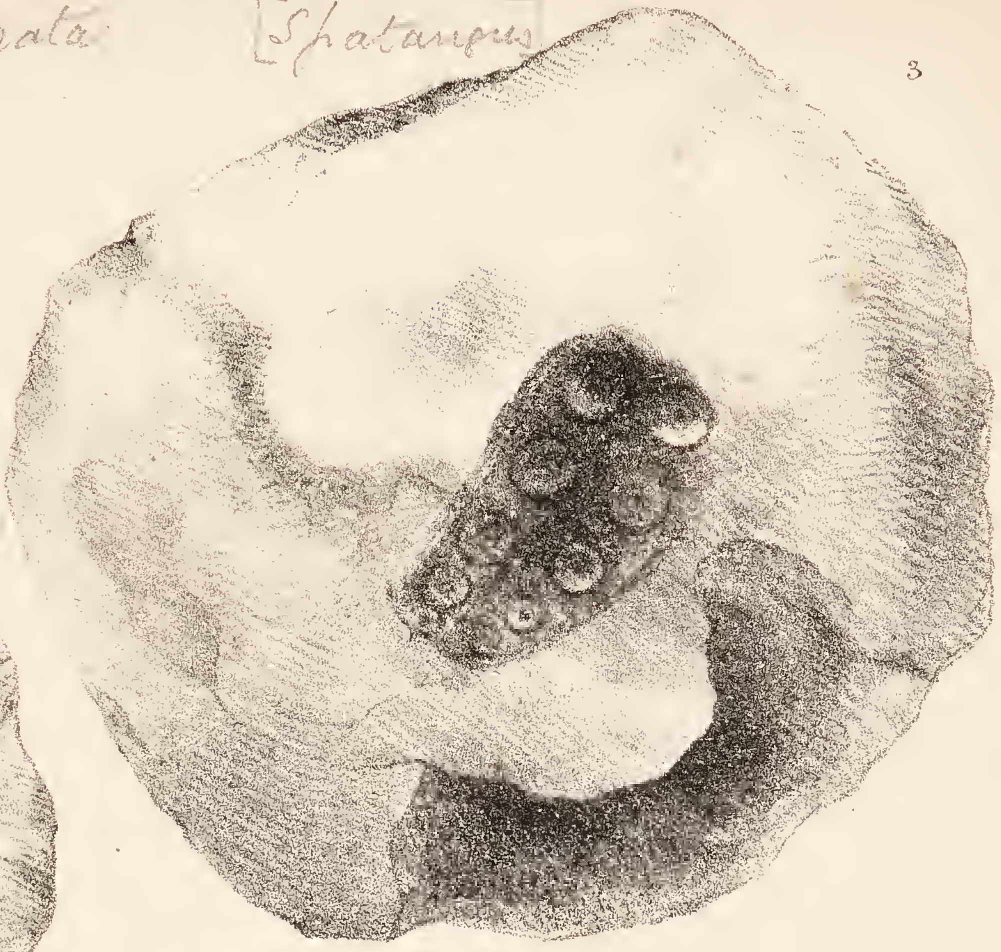
Flustra quadrata

1



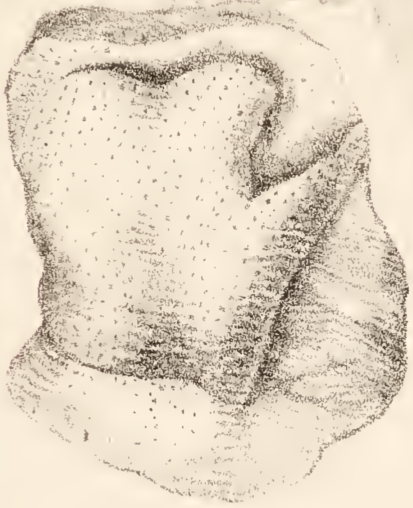
Spatangus

3



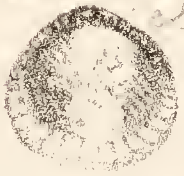
Flustra [illegible]

2

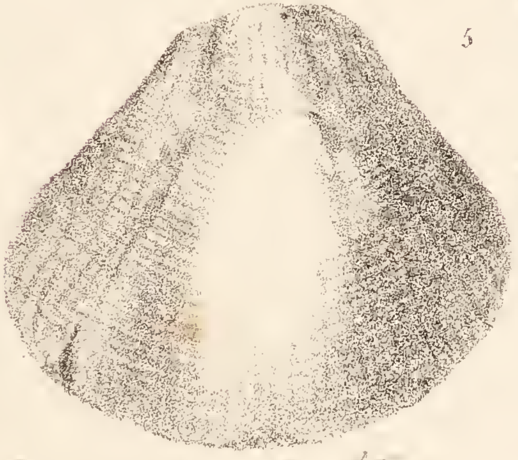


Lima elegans

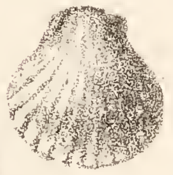
6



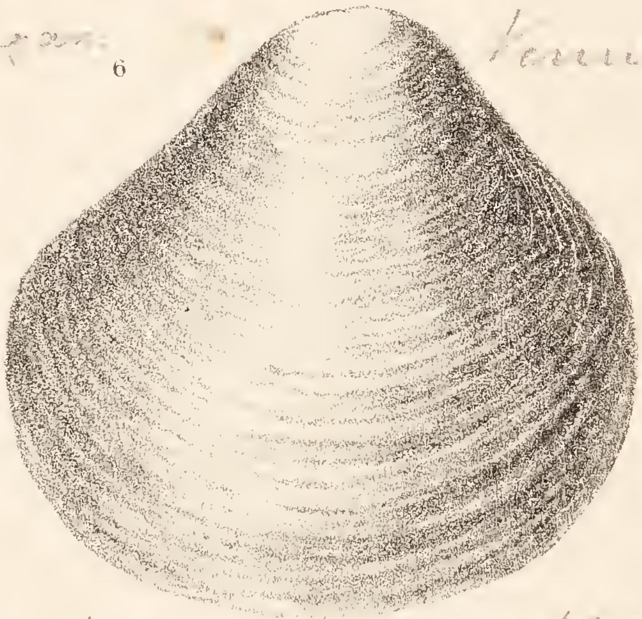
4 Cardium



5

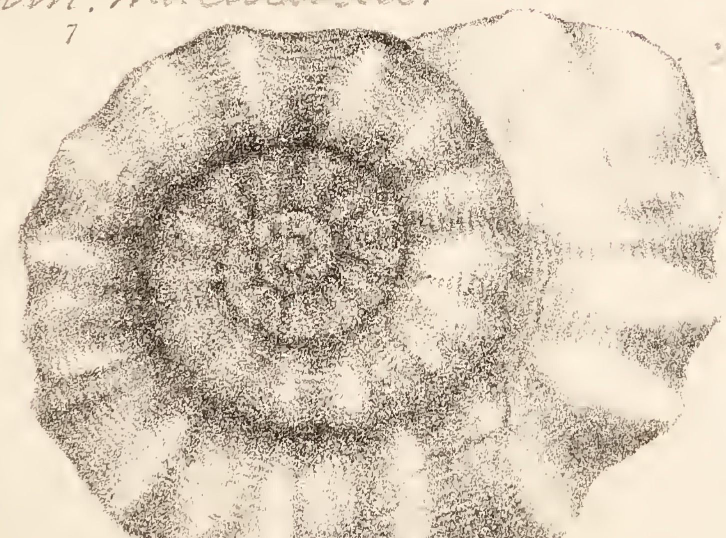


Venus



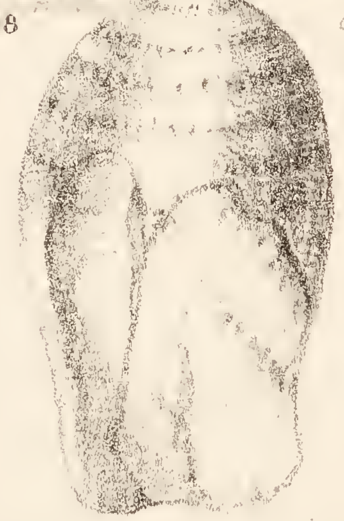
Am. maculatus.

7



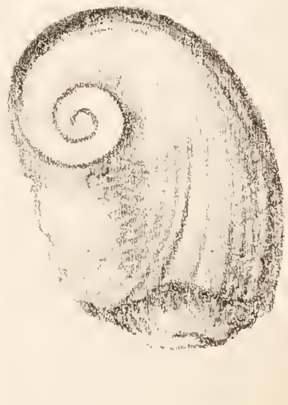
Pholas [illegible]

8



Euomphalus cristatus

9



Crag.

The crag is an antediluvial deposit, only locally distributed, and containing for the most part marine testaceæ, whilst a few freshwater shells are also found in it. Considering the small extent of the deposit, the number of the species occuring in it, is remarkable, as will be seen by the

Numerical Estimate of Contents.

Cirripeda 3, Conchifera 51, Mollusca 48,
Also pincers of Cancer pagurus. Belemnites mucronatus. Bones of Raia clavata.
Tubercles of the thorn back. Bones of Bos Urus, Cervus, and Mastodon.

Index to Plate V.

Balanus balanoides, 1. Mactra Listeri, 2. M. cuneata, 8. M. magna, 3, 7. Tellina solidula, 4. T. prœtenuis, 6. Astarte plana, 5 & 5a. A. antiquata, 9. Venus paphia, 13. Terebratula psittacea, 12. Nucula oblonga, 10. Pecten plebeius, 14. Cardium edule, 11. Patella parvula, 17. Paludina media, 15. Paludina rotundata 16 Trochus nitens, 23. Turbo bicarinatus, 18. T. elongatus, 19. Murex punctatus, 20 Ringicula ventricosa, 21. Scalaria graulandica, 22. Turritella incrassata, 24 T. Terebra, var. 25. Cerithium punctatum, 26. Natica glaucina, 27. Littorina littorea, 28. Helix ? 29.

Plate VI.

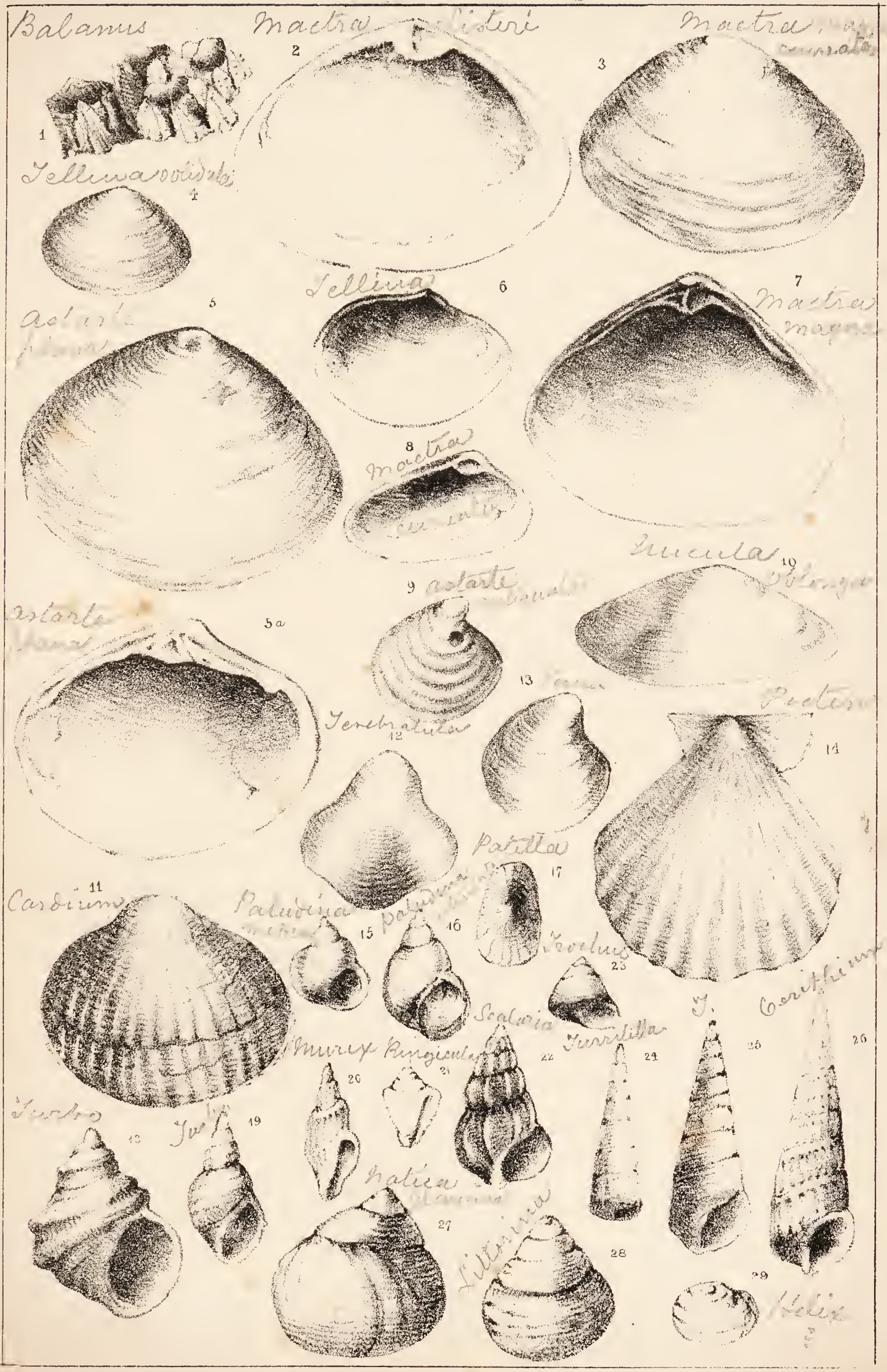
Murex elongatus, 1. M. angulatus, 2. M. lapilliformis 3 & var, 5. M. compressus 6 M. pullus, 7. Fusus striatus, 9, 10, 11. Tubercles of the Thornback 18, 19. Ichthyolite 20. Vertebræ of Raia clavata 12, 13, 14, 15, 16, 17. Teeth of Rat, 22 Pincer of Cancer pagurus, (portion) 21.

References.

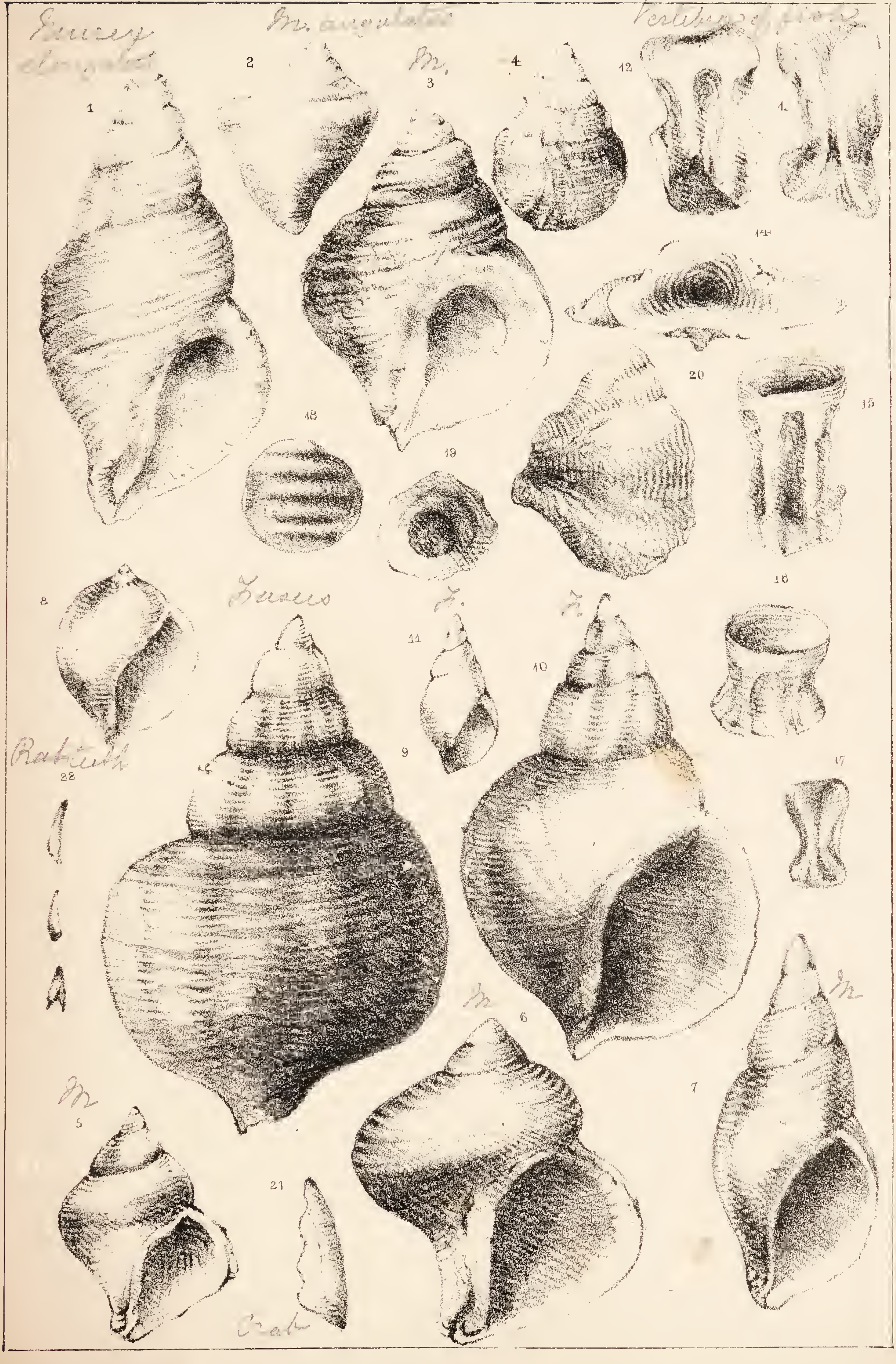
Woodward's "Geology of Norfolk" and Synoptical Table of British Organic remains....De la Beche's Manual of Geology, p. 229....Proceedings of the Scientific Society of London, vol. II p. 3.

PLATE V

CRAG


Balanus
1
Mactra
2
listeri
Mactra
3
Tellina
4
Tellina
5
6
7
Mactra
magna
8
Mactra
9
astarte
Nucula
10
Oblonga
astarte
5a
13
Terebratula
12
Pecten
14
Patella
17
11
Cardium
Paludina
15
Paludina
16
Trochus
23
Scalaria
Turritella
T.
Cerithium
Murex
Ringicula
20
21
22
24
25
26
Turbo
18
Turbo
19
Natica
27
Littorina
28
29
Helix
?

CRAG


[illegible] elongatus
M. angulatus
Vertebrae of fish
1
2
M.
3
4
12
13
14
20
15
18
19
16
8
Fusus
F.
11
F.
10
9
Rabbit
28
17
M
6
M
7
M
5
21
Crab

Beds above the London Clay.

Bagshot Sands. These rest on the London clay, and consist of ochreous sands, and marls containing Nummulites, and a few fossils of the familes Trochidœ & Pectenidœ, &c. The Freshwater Beds of the Isle of Wight are divided by the upper marine formation, which is equivalent to the sands, which intervene between the two freshwater deposits of Paris: in the upper division, there is a mixture of terrestrial and freshwater species, and in the lower, the fossils are those of species of Paludina, Potamides, Melania, Lymnea, &c,

Plastic Clay.

This deposit consists of pebble beds, unmingled with clay, and rests upon the Chalk. Marine species occur most plentifully in it, but there is also an occasional admixture of freshwater and terrestrial shells. According to Mr Conybeare, the fossils are those of the following species.

Mollusca—Infundibulum echinatum. Murex latus. M. gradatus. M. rugosus, Cerithium reticulatum. C. intermedium. C, melanoides. Turritella, Planorbis hemistoma.

Conchifera—Ostrea pulchra, O. tener. Pectunculus. Cardium Plumstedianum, Mya plana, Cytherea, Cyclas cuneiformis, C. deperdita, C. obovata.

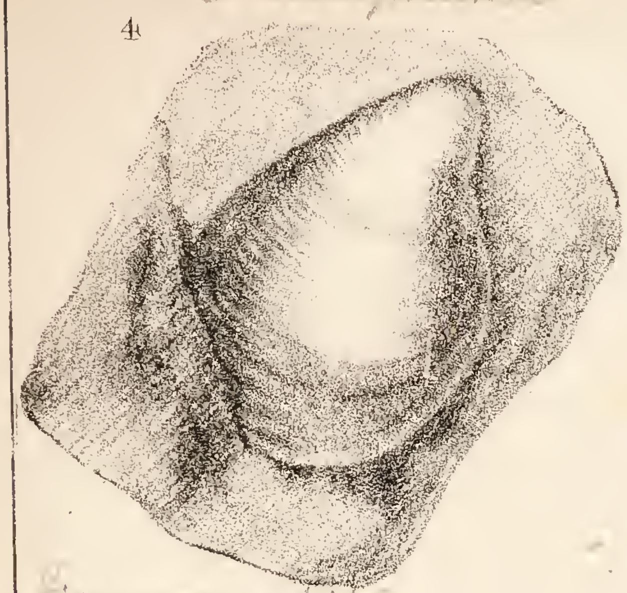
Index to Plate VII.

Nummulite (showing the structure) 1, 2. Turritella............ 3
Ostrea pulchra......4 Vulsella? .... 5 Cardium Plumstedianum 6
Planulites 7 & 8

PLATE VII. PLASTIC CLAY.

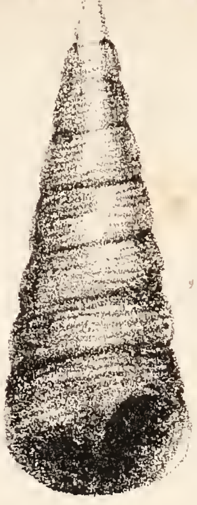
Ostrea pulchra

4

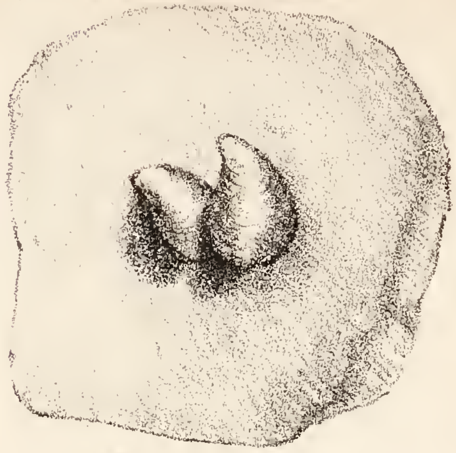


Turritella

3

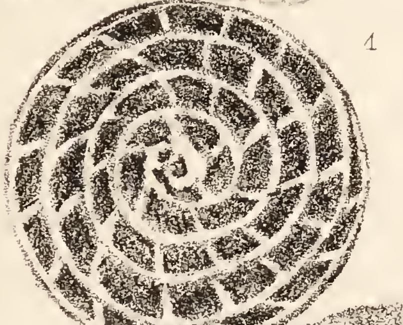


5 Vulsella



Nummulite

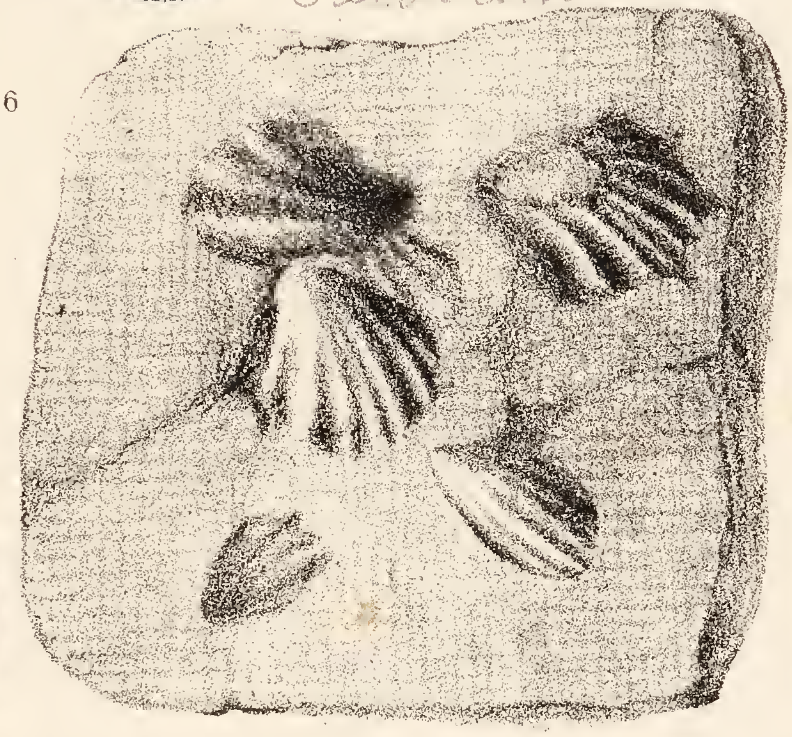
1



2

Cardium

6



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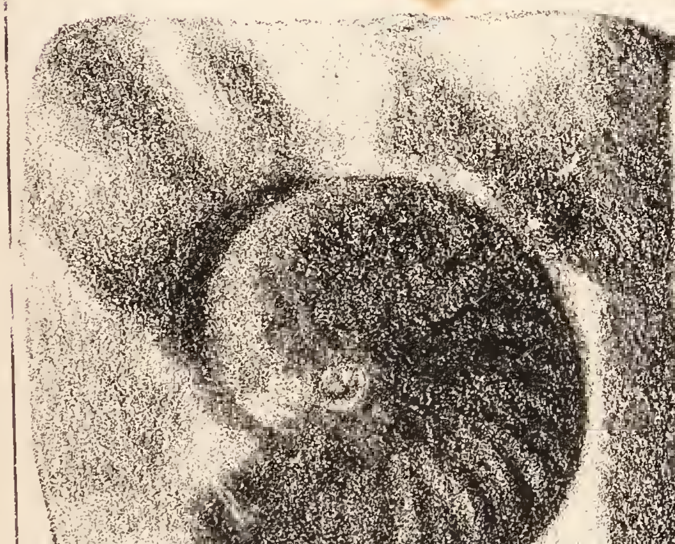
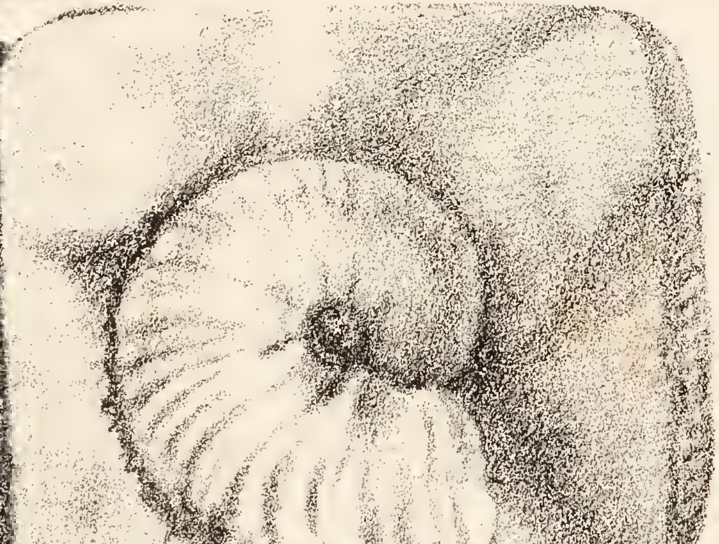
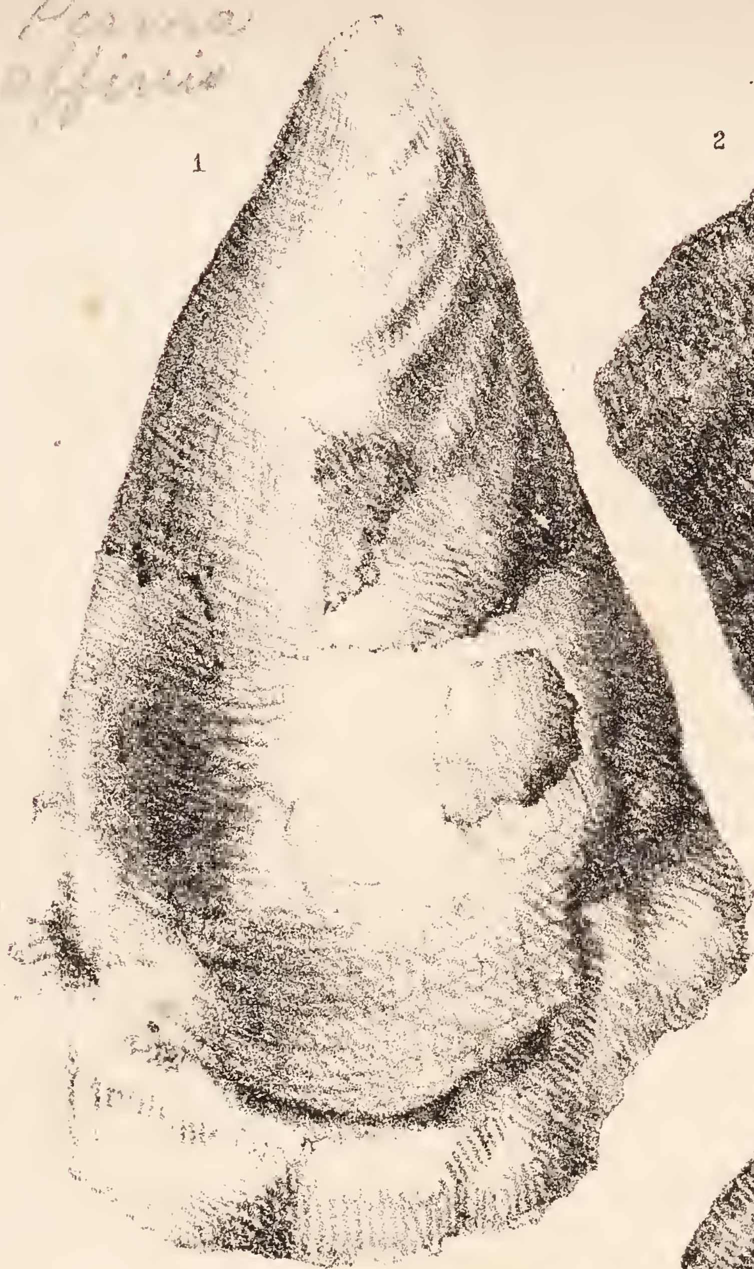
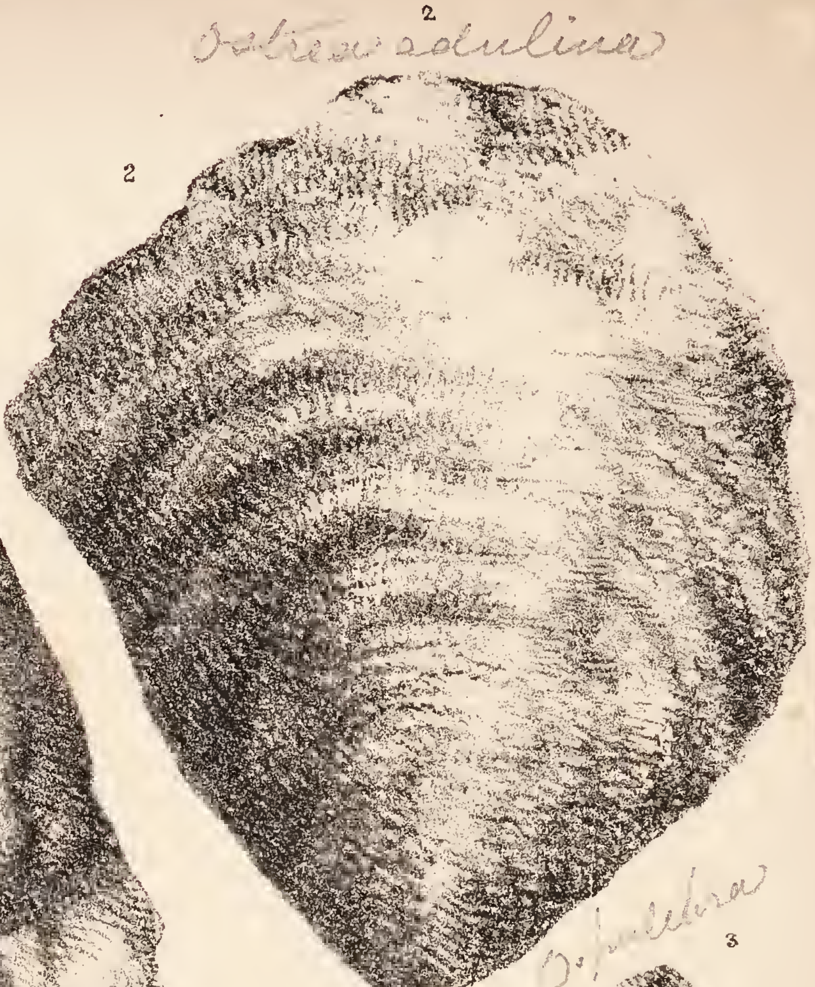


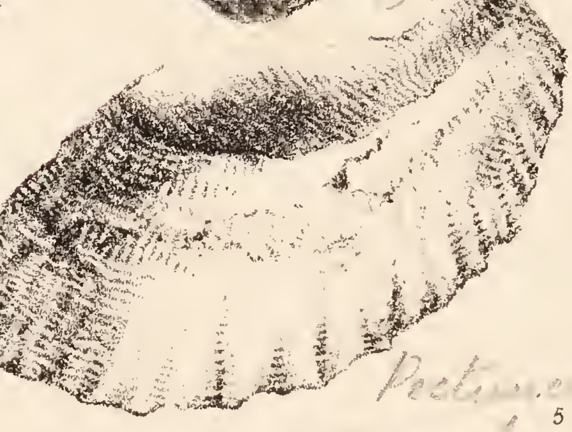
7 Planulites

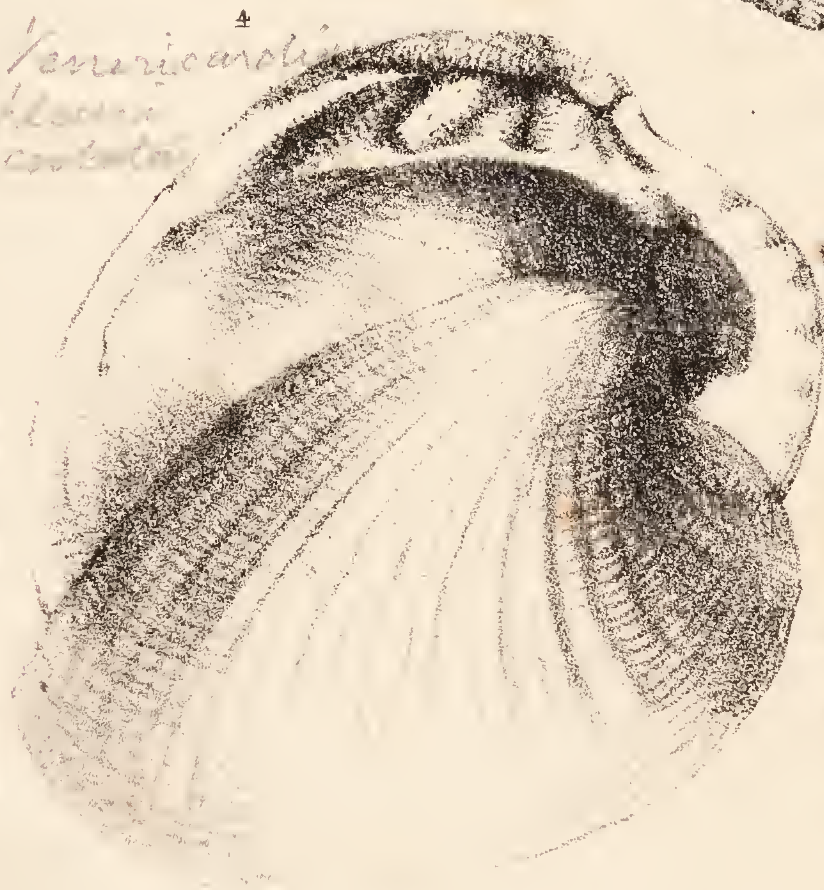


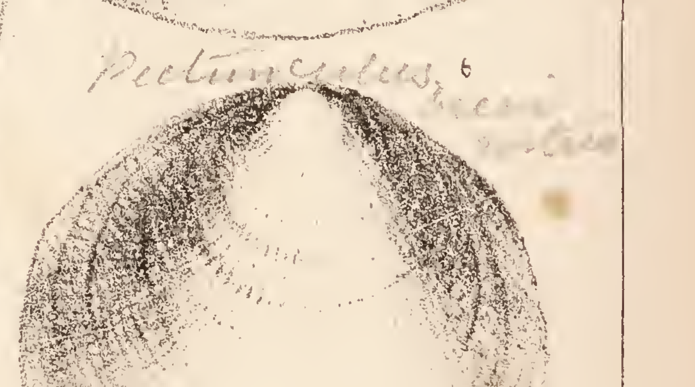
LONDON CLAY.


1
Pinna affinis


2
Ostrea edulina
2


O. pulchra
3


4
Venericardia planicosta


Pectunculus brevirostris
5

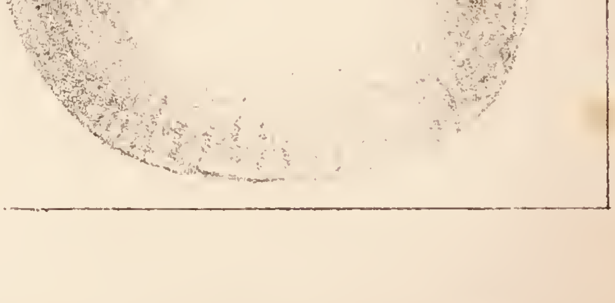
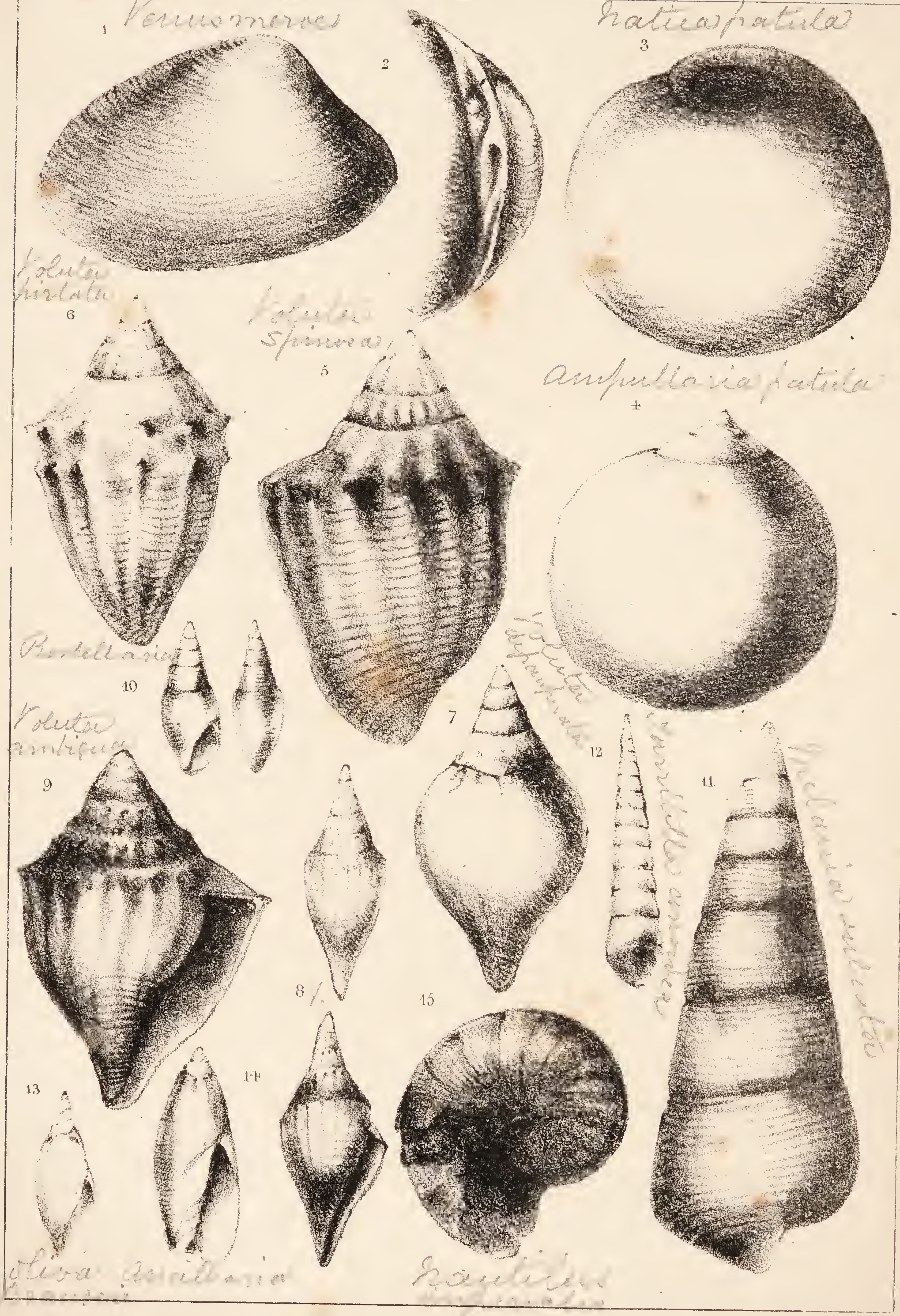

Pectunculus brevirostris
6

PLATE. IX

LONDON CLAY.



London Clay.

By this name, all the argillaceous and calcareous Clays which underlie the London districts are distinguished. They vary in colour from blackish to blueish black, and in many cases contain abundance of septaria and selenite, (sulphuri.-calcite.) These deposits, as well as the Plastic Clay, are of aqueous origin, and the manner in which they are found betokens their quiet deposition.

Numerical Estimate of Contents.

Polypi	1	Cephalopoda	10
Radiaria	0	Crustacea	3
Conchifera	89	Annulata	2
Gasteropoda	11	Cirripeda	0
Trachelipoda	155		

Total number : 260 species.

Also bones, and more frequently vertebræ of Fish; remains of a Crocodile and Turtle; and several Plants, but very commonly only the fructifications of them.

Index to Plates VIII *and* IX.

Plate VIII. 1, Pinna affinis. 2, Ostrea edulina. 3, O. pulchra. 4, Venericardia planicostata. 5, 6, Pectunculus brevirostris.

Plate IX. 1, Venus meroe. 2, Hinge of same. 3, Natica patula. 4, Ampullaria patula. 5, Voluta spinosa. 6, Voluta hirtata. 7, V depauperata. 8,V. crenulata. 9, V. ambigua. 10, Rostellaria ranasci. 11, Melania sulcata. 12, Turritella conoidea. 13, Oliva Branderi. 14, Ancillaria. 15, Nautilus imperialis.

References.

Bowerbank's Fossil Fruits and Seeds of the London clay. De la Beche's "Geological Manual," p. 260....Woodward's synoptical Table of British Organic Remains....Parsons on Fossil Seeds, &c. from London clay....Phil. Trans. vol. L, part 1, p. 396....Parkinson's Organic Remains, vol. 1, tab. 6 & 7.

Hampshire Beds.

This formation consists of marine and freshwater beds, common to parts of Hampshire and the Isle of Wight; and though they are somewhat different in mineralogical structure from the contemporaneous beds in the neighbourhood of Paris, are nearly analogous in respect of fossil contents; we may, therefore, conclude that they were formed at or about the same epoch, and that the characters of each originated from local or incidental circumstances.

Numerical Estimate of Contents.

Polypi	0	Cephalopoda	0
Radiaria	0	Crustacea	0
Conchifera	10	Annulata	2
Gasteropoda	2	Cirripeda	0
Trachelipoda	19		

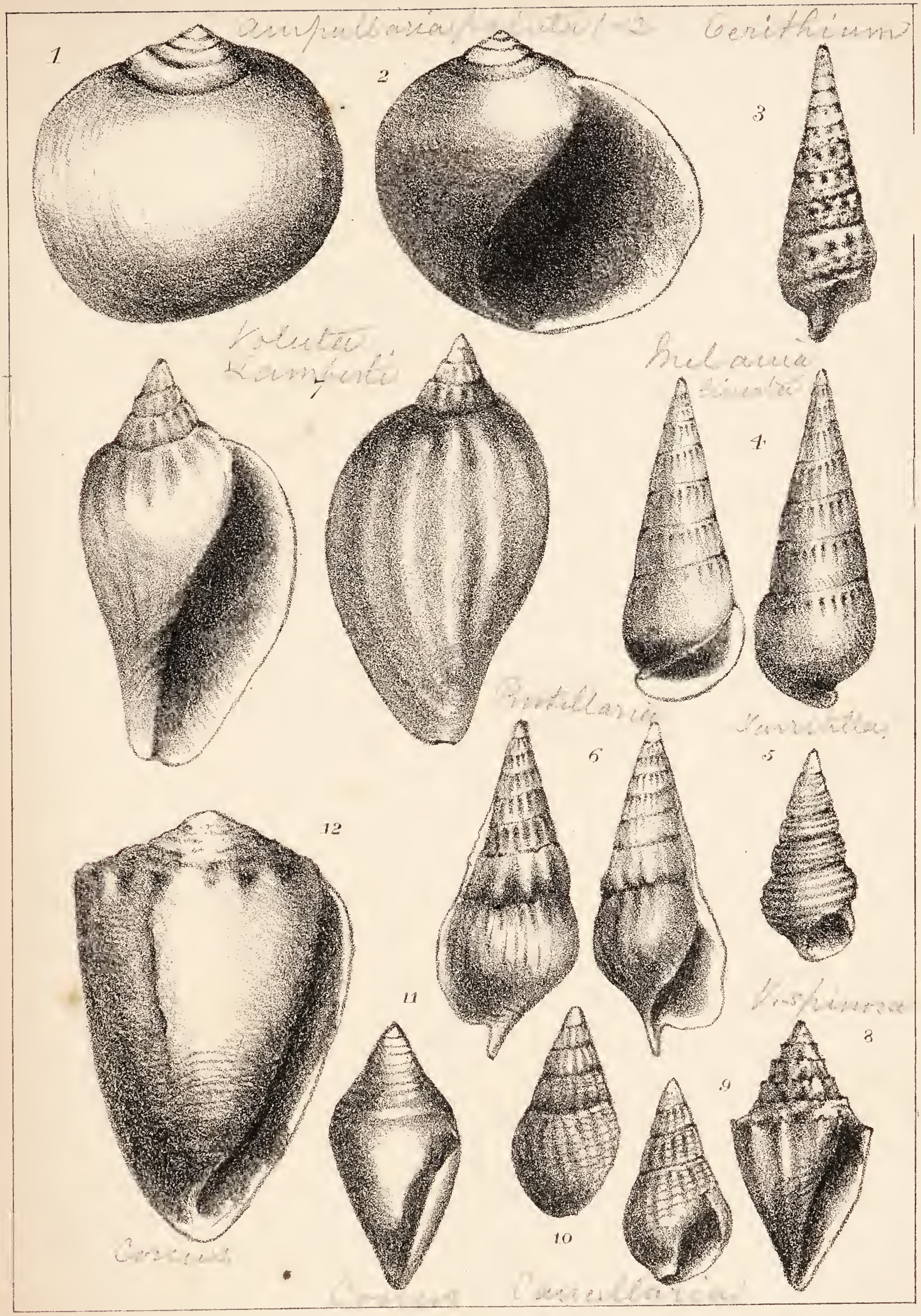
Total number: 33 species.

Index to Plate IX*a.*

1, 2, Ampullaria patula. 3, Cerithium funatum. 4, Melania lineata. 5, Turritella terebra (rar. abbreviata.) 6, Rostellaria rimosa. 7, Voluta Lamberti. 8, V. spinosa, var. B. 9, 10, Cancellaria quadrata. 11, Conus Dormitor. 12 Conus?

PLATE IXA.

HAMPSHIRE BEDS



Chalk and its allies.

The chalk is the leading member from which that group of rocks, comprising the upper and lower greensand and gault (in addition to the ordinary Chalk beds, chalk marl and red chalk) derives its name, viz. "the cretaceous system." The *chalk* deposit may be divided into two portions; the uppermost containing in all its situations, horizontal beds of flint; the lower generally abundant in its marine productions,—but organic remains are found in both.

Numerical Estimate of Contents.

Polypi . .	146	Cephalopoda .	107
Radiaria .	85	Crustacea .	11
Conchifera .	299	Annulata .	30
Gasteropoda Trachelipoda	56	Cirripeda .	2

Total number: 736 species.

as well as remains of Saurians, Mammalia, and a few Plants and Fishes.

Index to Plates X, XI, XII, XIII, XIV.

Plate X. 1, Asterias lunatus. 2, Scutella hemispherica. 4, S. depressa. 3, Galerites vulgaris. 6, Galerites vulgaris v. B. 5, Spatangus cordiformis. 7, S. rostratus. 8, S. coranguinum. 9, Pecten concentricus. 10, same, var. B. 11, P. granulosum. 14, 15, P. sexcostatus. 12, Plagiostoma spinosum. 13, Dianchora spinosum.

Plate XI. 1, Pinna sulcata. 2, Ostrea inequicostata. 3, O. concentrica. 4, O. triangularis. 5, Gryphœa globosa. 6, 7, Terebratula gallina. 8, 9, T. subundata. 10, T. pentangulata. 11, T. rentiformis. 12, T. ovalis. 13; Magas truncata.

Plate XII. 1, Magas pumilus. 2, Plicatula inflata. 3, Inoceramus Cuvieri. 4, I. mytiloides. 5, Cirrus perspectivus. 6, C. depressus. 7, Dolium nodosum. 8, Belemnites mucronatus. 9, B. granulatus. 10, Nautilus elegans.

Plate XIII. 1, Ammonites rarians. 2, A. undatus. 3, A. falcatus. 4, A. curvatus. 5, A. cinctus. 6, A. navicularis. 7, A. rusticus. 8, Hamites plicatilis. 9, H. compressus.

Plate XIV, 1, 2, Terebratula undata. 3, T. rotundata. 5, Lima rudis. 6, Belemnites mucronatus. 7, B. minimus. 8, Scutella hemispherica. 9, Serpula antiquata. 10, Ammonites alternatus. 11, A. Mantelli.

References.

Woodward's "Synoptical table"....De la Beche's Manual. 282, 507....Phillips's Geology 1837, 218

PLATE X. CHALK.

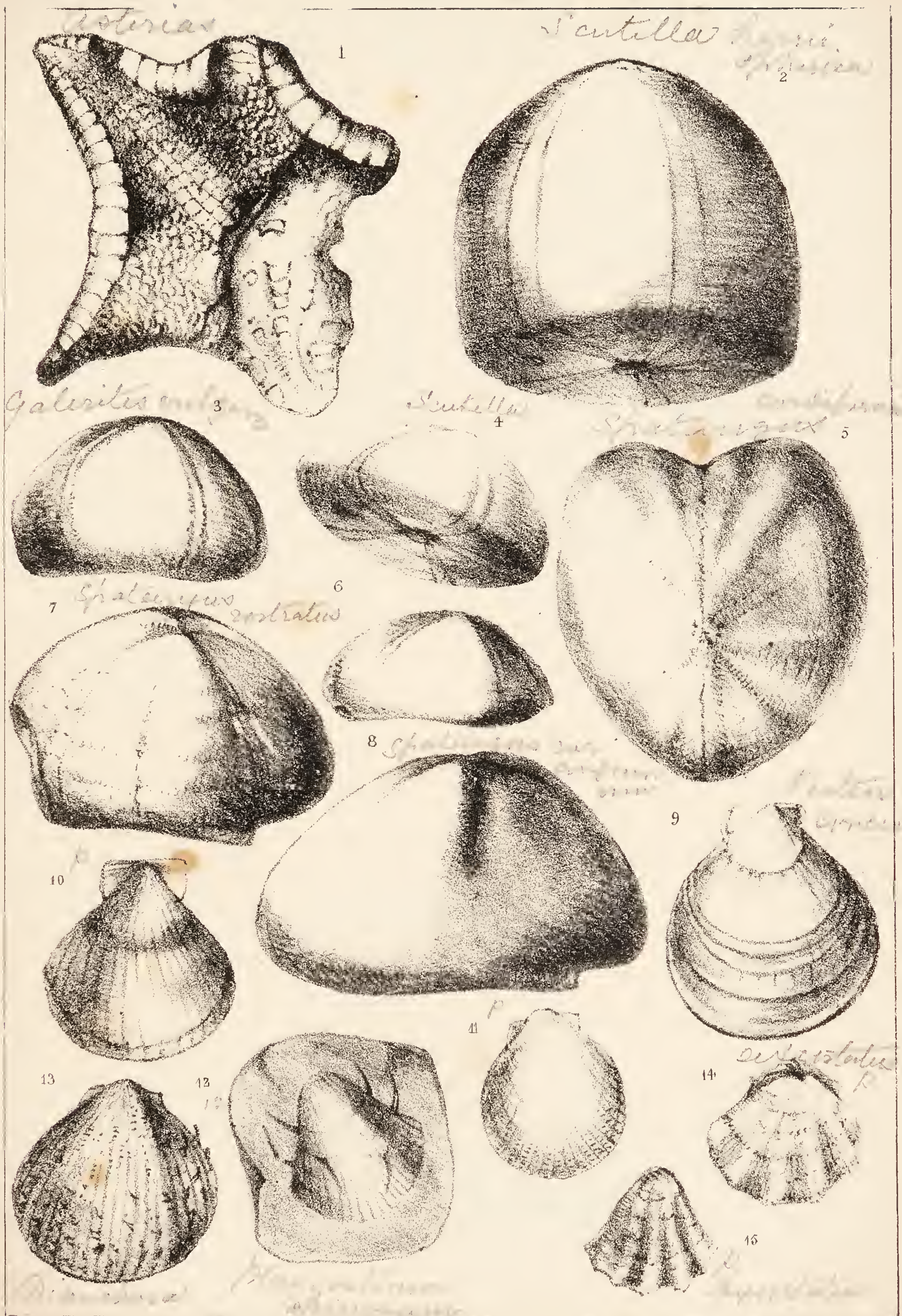


PLATE. XI. CHALK.

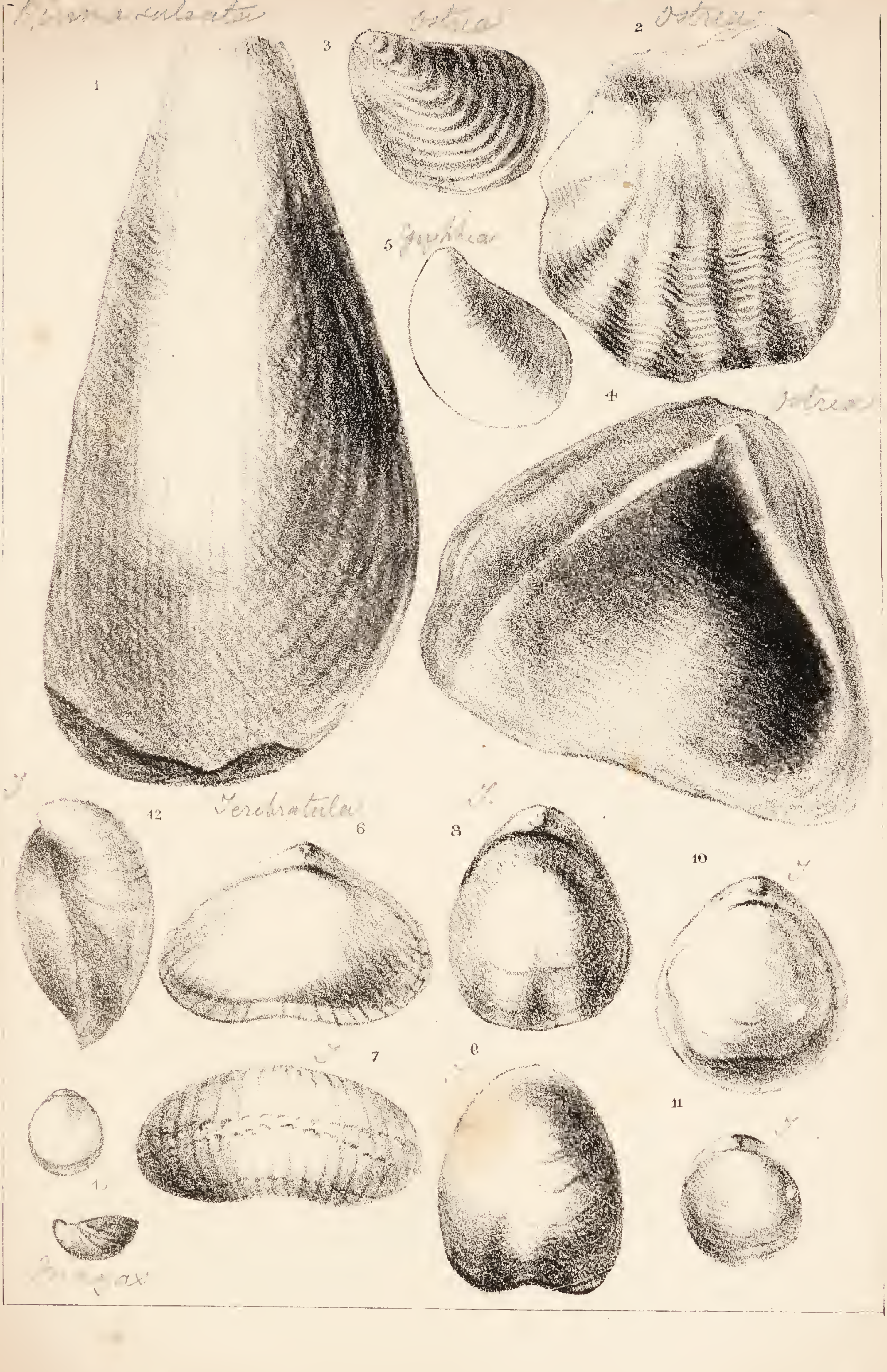
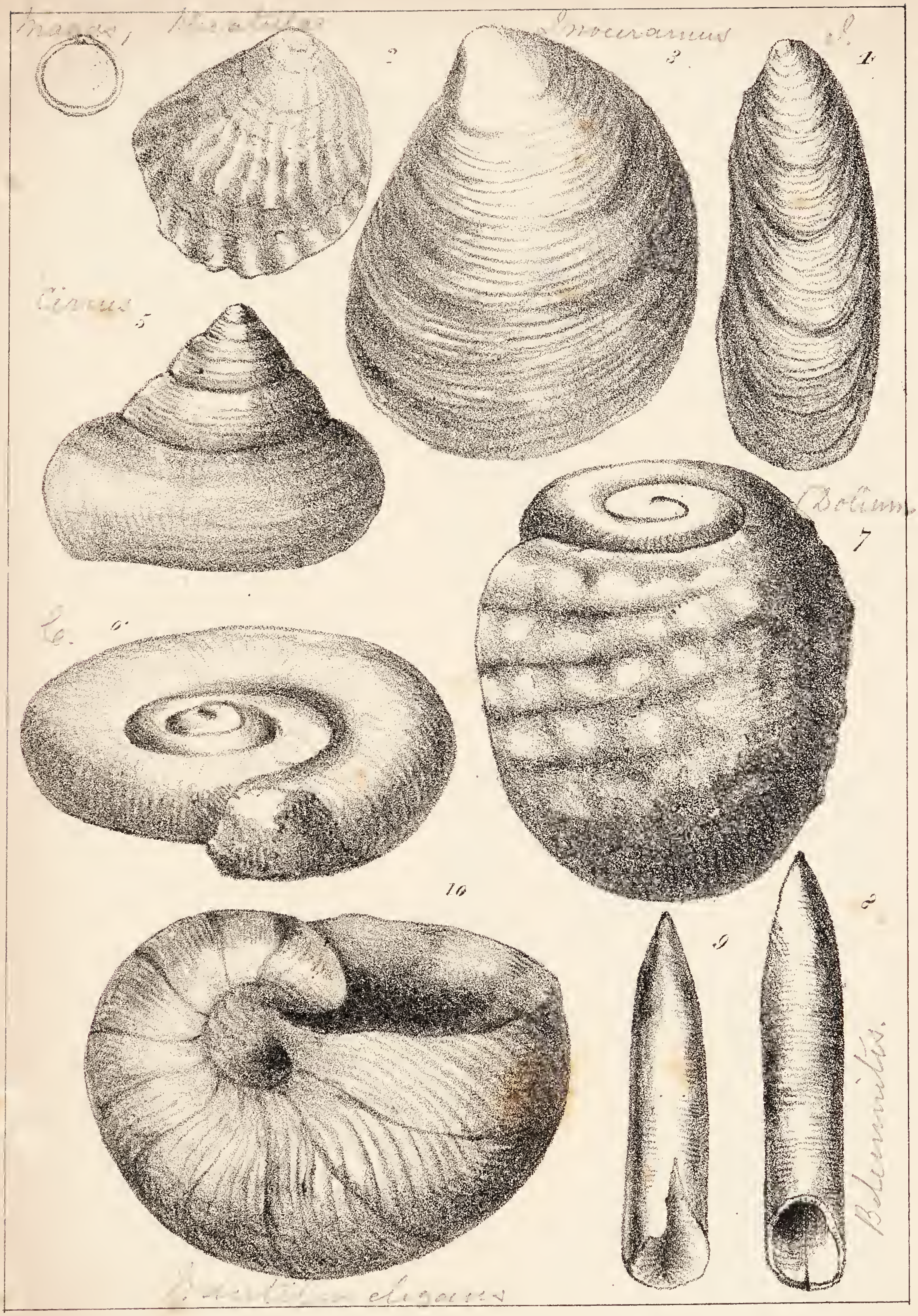
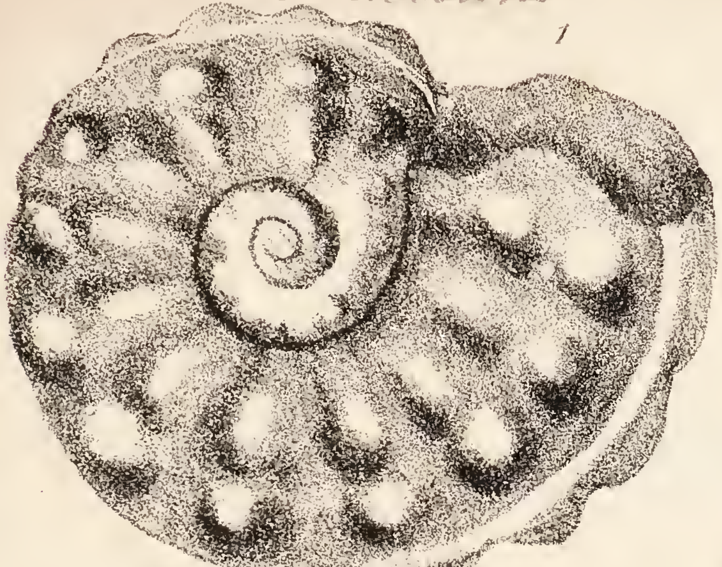


PLATE XII.

CHALK.



CHALK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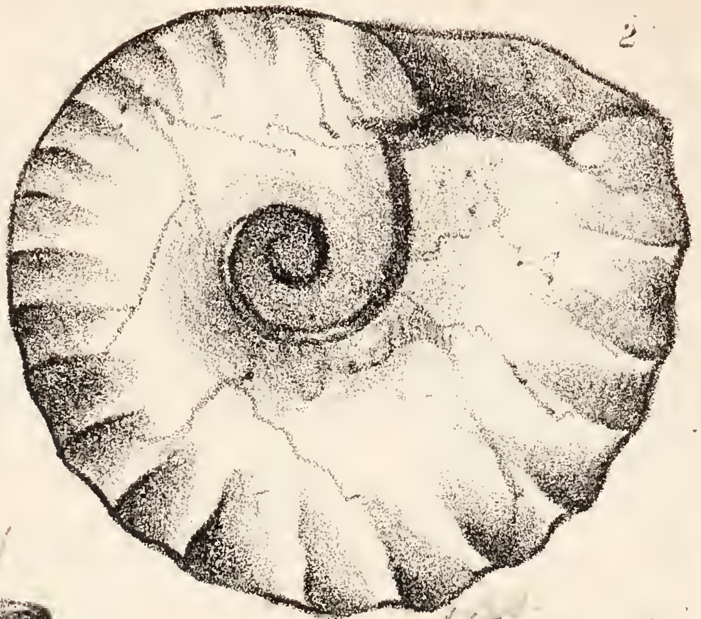
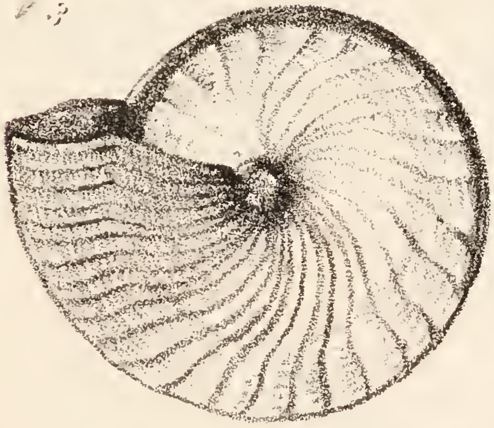
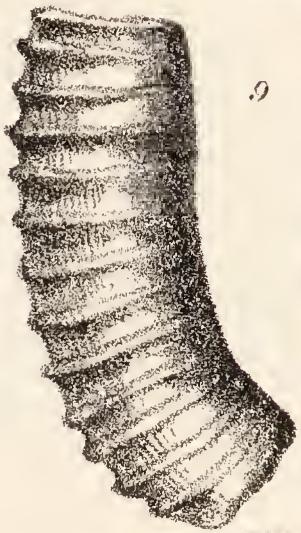
a. varians


2

a. undatus


a. falcatus

3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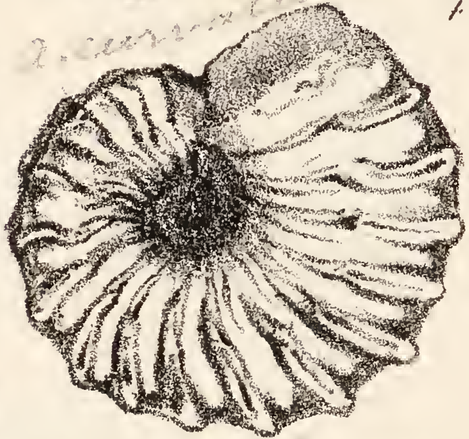
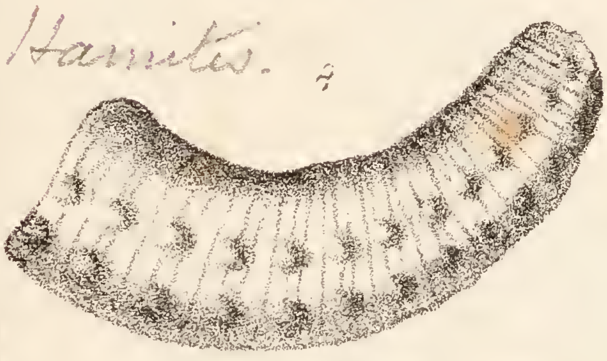
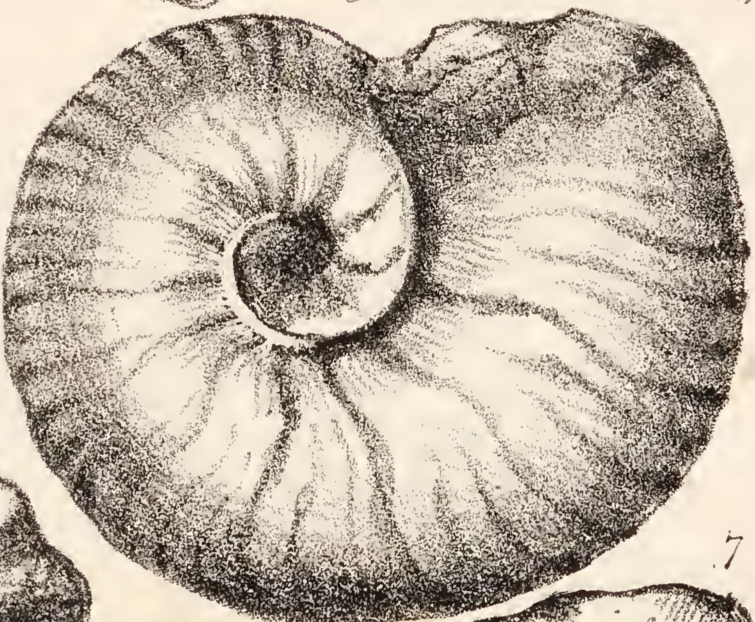
9


a. curvatus

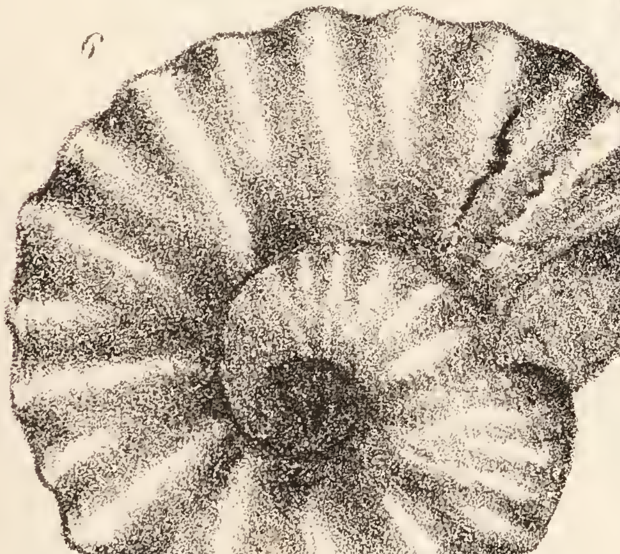
4


Hamites.

8


a. cinctus

5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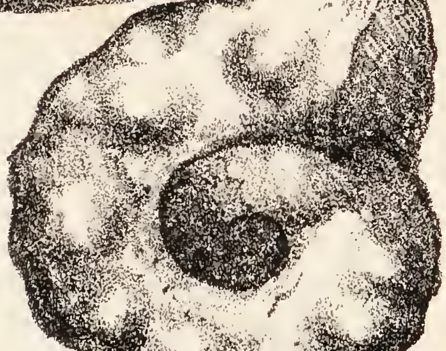
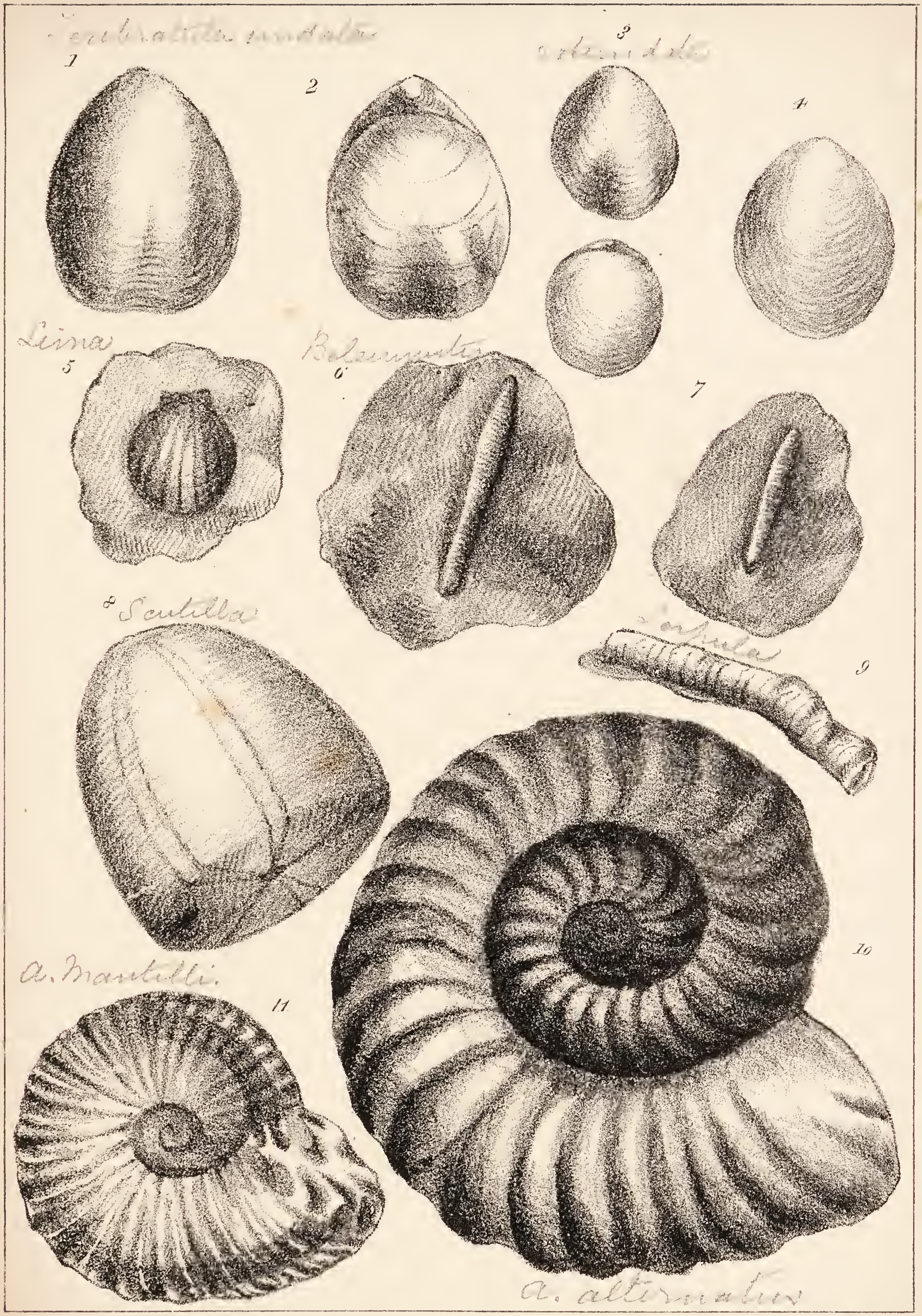
a. Navicularis


7

a. rusticus

PLATE XIV. CHALK MARL &c.



Greensand.

The Greensand, as before stated, forms a portion of the cretaceous system, and is divided into the upper Greensand, Gault, and lower Greensand; the first bed merges into the superincumbent chalk; the Gault consists of a blueish gray argillaceous deposit; and the lower Greensand is formed of sands and sandstones varying considerably in point of induration.

Numerical Estimate of Contents.

Polypi	2	Cephalopoda	24
Radiaria	3	Crustacea	0
Conchifera	90	Annulata	7
Gasteropoda	1	Cirripeda	0
Trachelipoda	15		

Total number: 142 species.

Mammalian and saurian remains are also found.

Index to Plates XV, XVI, XVII, XVIII.

Plate xv. 1, Serpula antiquata. 2, Serpula rustica. 3, S. articulata. 4, Terebratula biplicata. 5, Ostrea carinata. 6, Exogyra conica. 7, Sphœra corrugata. 8, Pecten orbicularis. 9, P. quadricostata. 10, P. asper. 11, P. obliquus. 12, Gervillia aviculoides.

Plate xvi. 1, Gervillia solenoides. 2, Mytilus lanceolatus. 3, Modiola æqualis. 4, M. bipartita. 5, Trigonia dædalia. 6, T. alæformis. 7, Nucula antiquata. 8, Pectunculus sublævis. 9, Arca carinata. 10, Cucullœa glabra.

Plate xvii. 1, Venus angulata. 2, Tellina inæqualis. 3, Vermetus polygonalis. 4, Ammonites planulatus. 5, A. catillus. 6, A. auritus. 7, A. inflatus.

Plate xviii. 1, Plicatula pectinoides. 2, P. asper. 3, Inoceramus concentricus. 4, Nucula pectinata. 5, Cirrus plicatus. 6, Belemnites minimus. 7, Nautilus inæqualis. 8, Ammonites splendens. 9, A. lautus. 10, A. tuberculatus. 11, Hamites maximus. 12, H. rotundus. 13, H. spiniger.

References.

Woodward's Synoptical Table.... De la Beche's Geological Manual 284.... Annals of Phylosophy, Memoir by Dr. Fitton "On the Beds between the chalk and Purbeck Limestones"—I. P, Martin's Geology of Sussex.... Mantell's Geology of Sussex.

PLATE XV.

GREENSAND

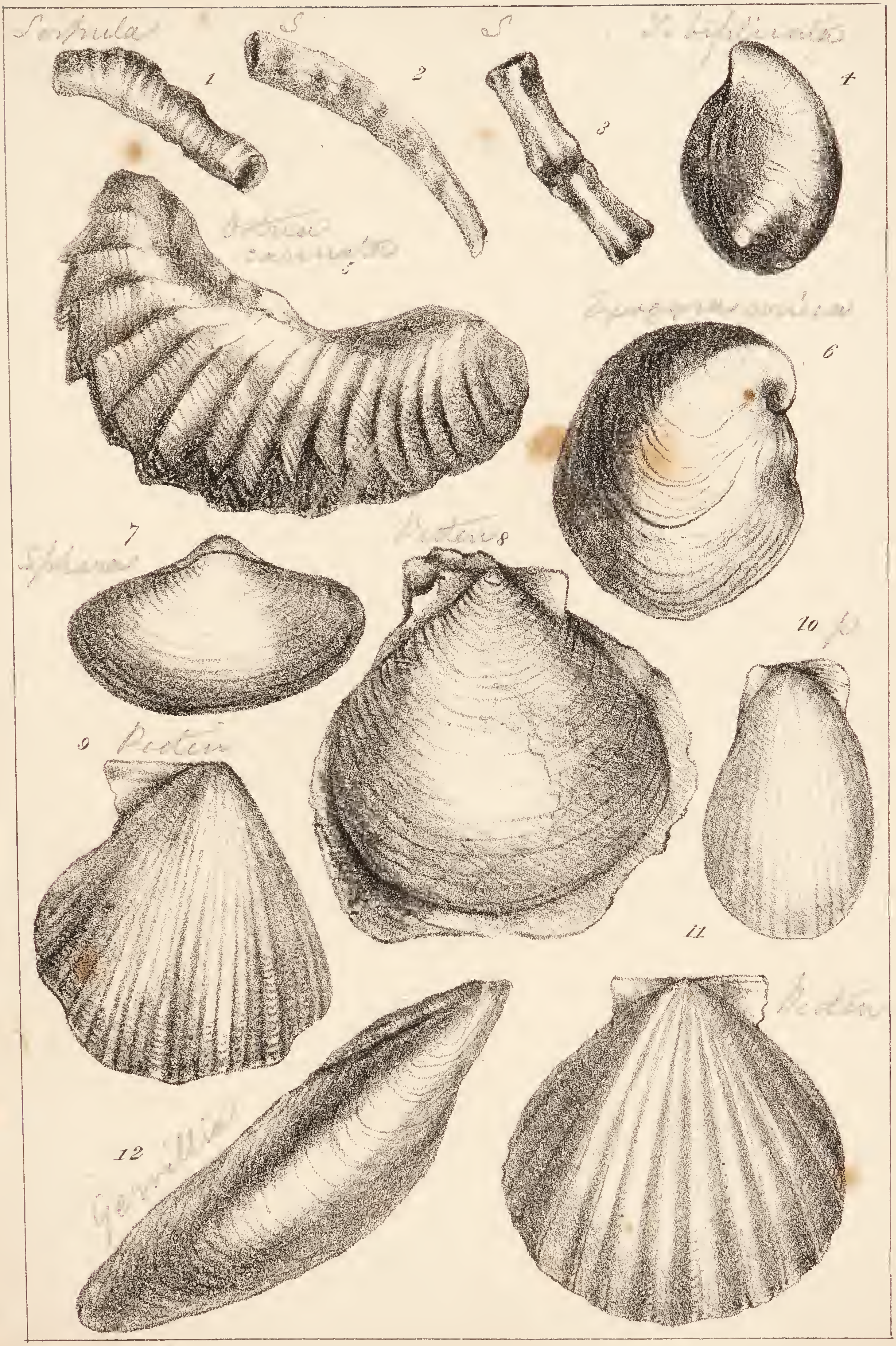


PLATE XVI. GREENSAND.

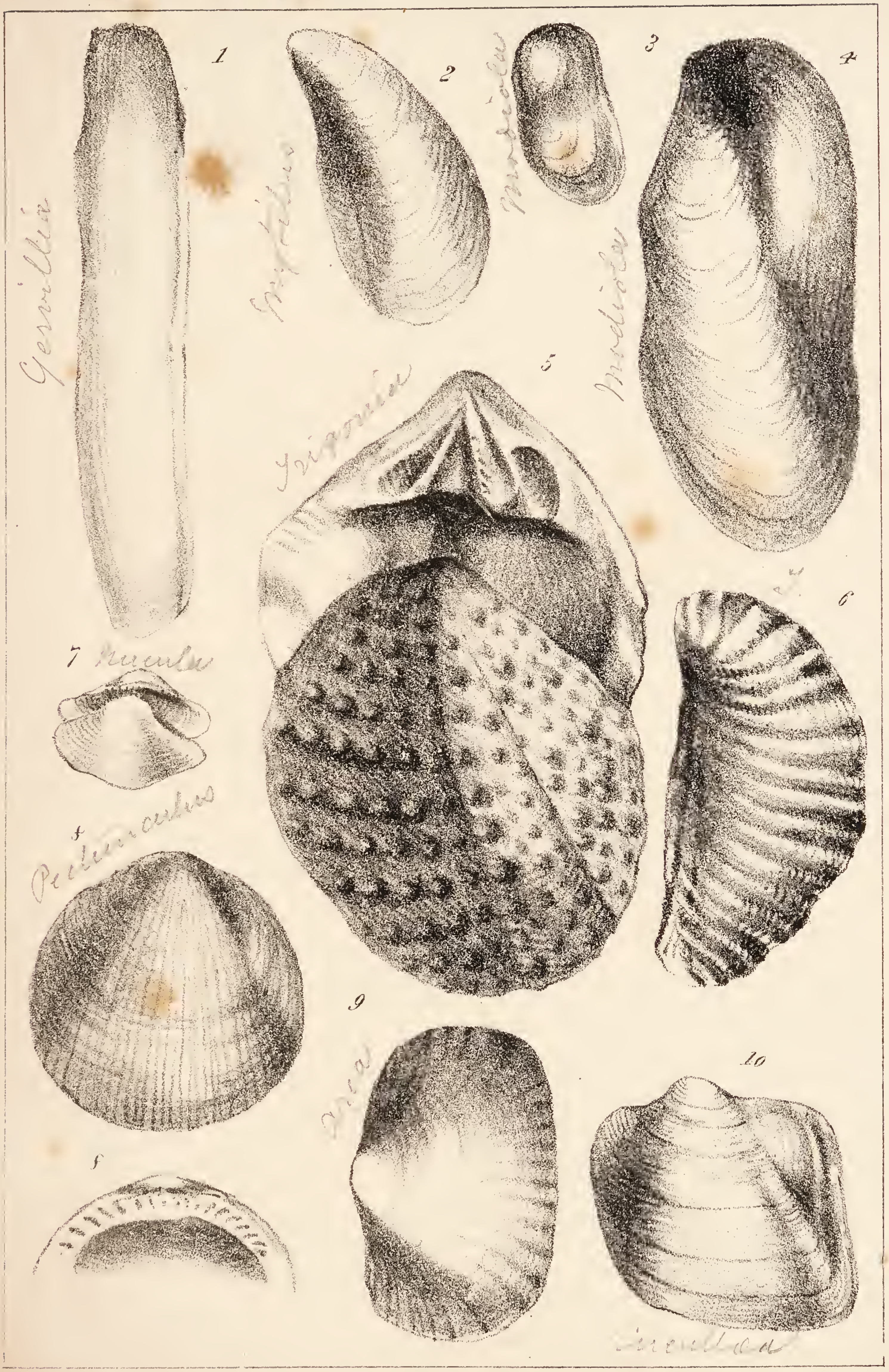
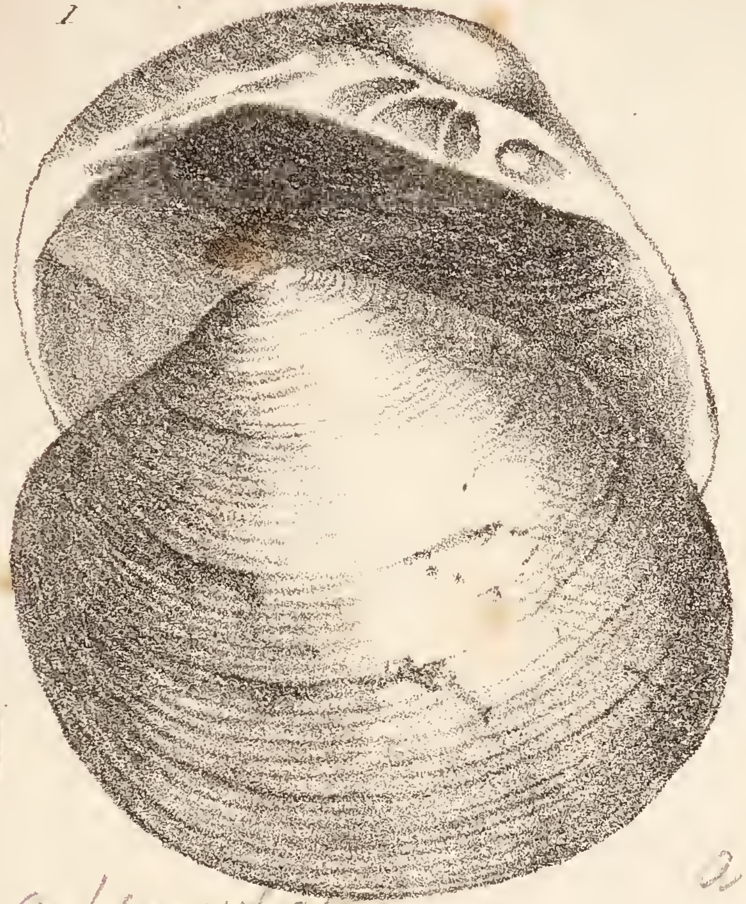


PLATE XVII. GREENSAND

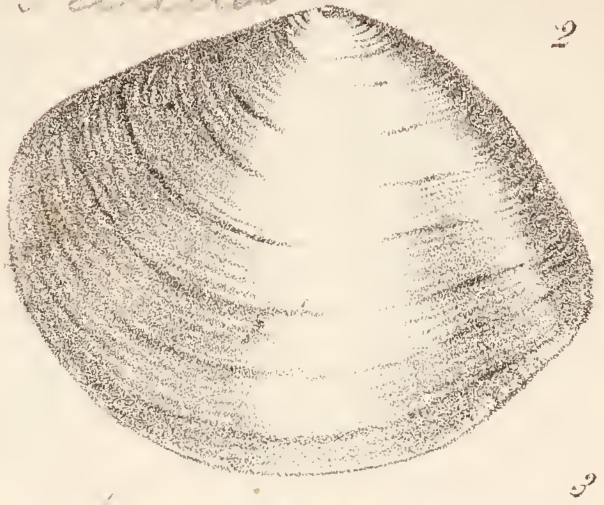
Venus

1



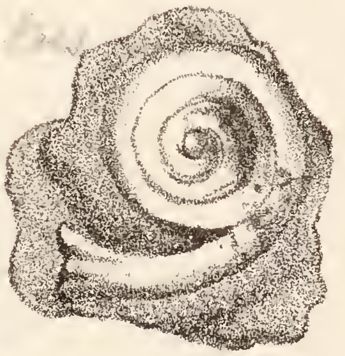
Tellina

2



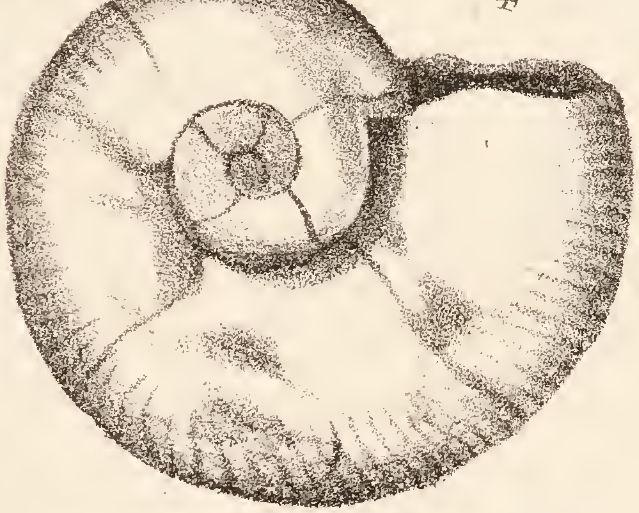
3

Vermetus



a. planulatus

4



a. [illegible]

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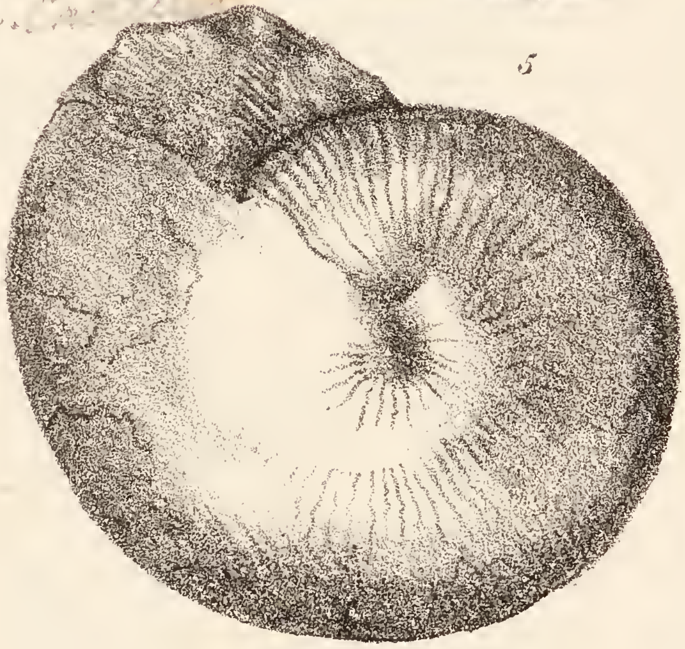
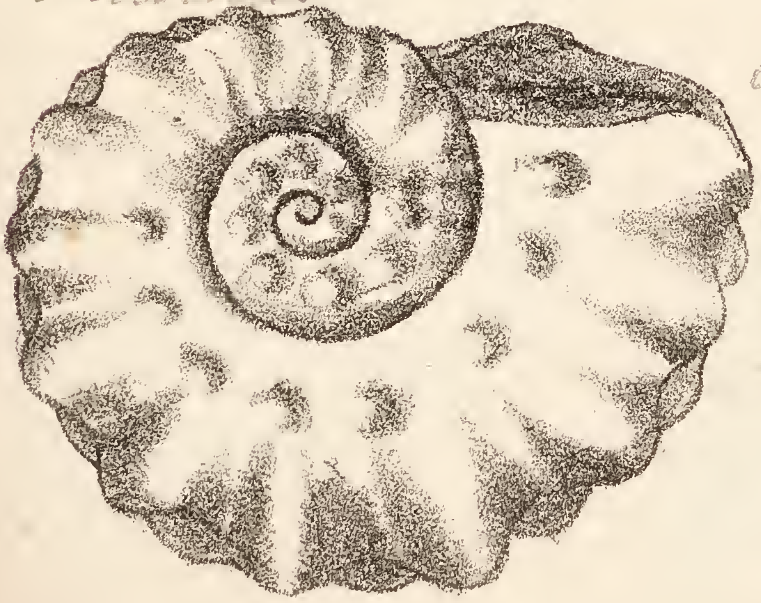


a. auritus

6



7

a. inflatus

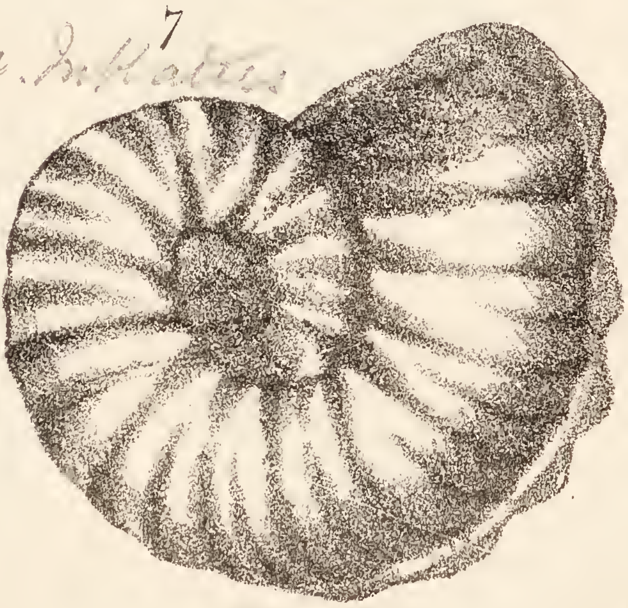
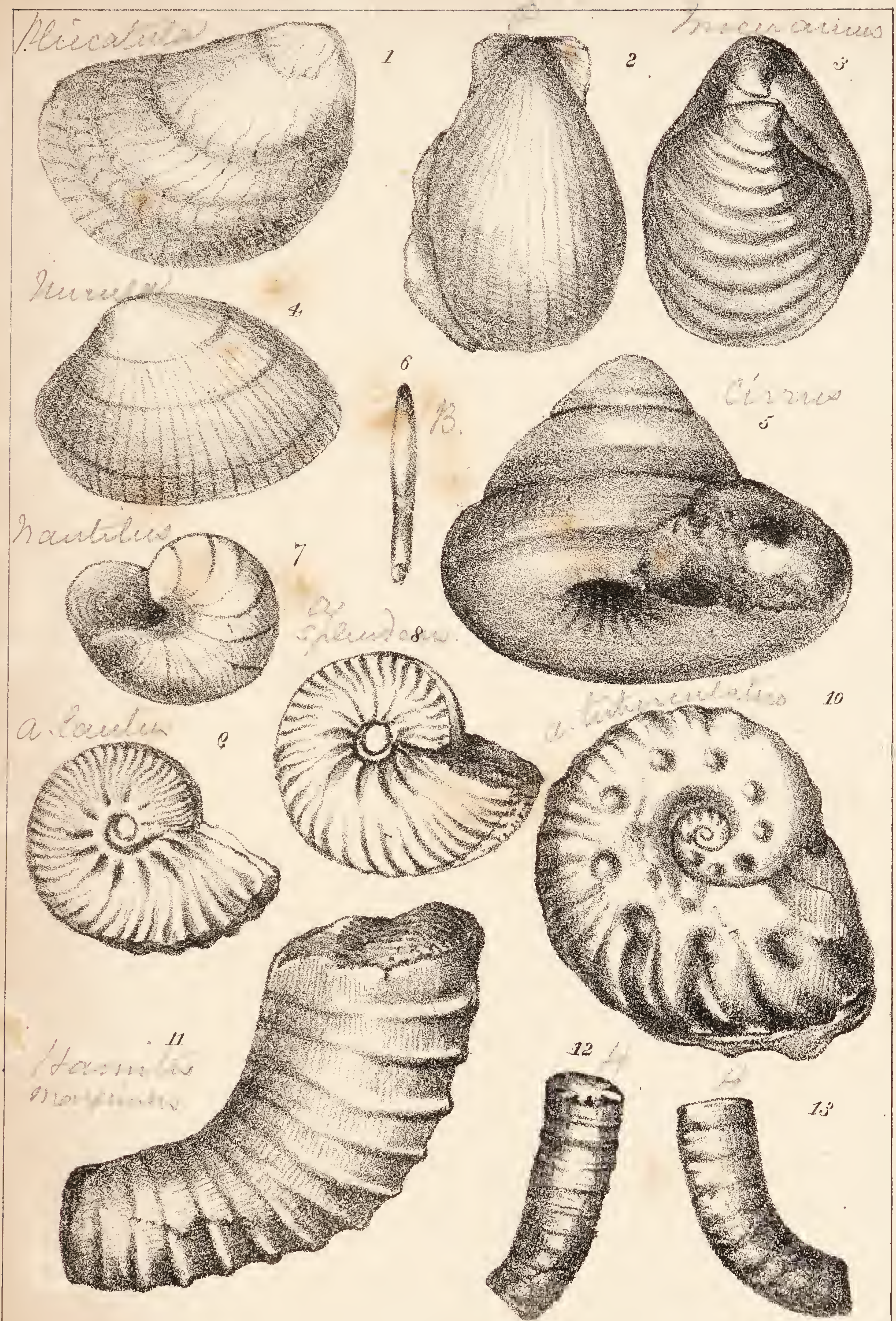


PLATE XVIII. GAULT.



Wealden Rocks.

These rocks occur next below the greensand series, and comprise, 1st, WEALD CLAY, consisting of Slaty clays and fine grained limestones, the latter containing (abundantly) the impressions of the minute *Cypris Faba,* and it is generally of a brown or blue colour. 2nd, the HASTINGS SANDS, consisting of loam sands and shales, between which layers of iron stone are of frequent occurrence. 3d, PURBECK BEDS, comprising alternations of limestones and marls. The fossils which occur in these beds are principally those analogous to the existing freshwater species, although occasionally a few marine shells are also found; judging then from these evidences, we should assume that the beds originated in some river, lake or æstuary.

Numerical Estimate of Contents.

Conchifera 11? Mollusca 10? and the remains of Plesiosauri, Hylœosauri, Megalosauri, Iguanodon, Crocodiles, and Tortoises.

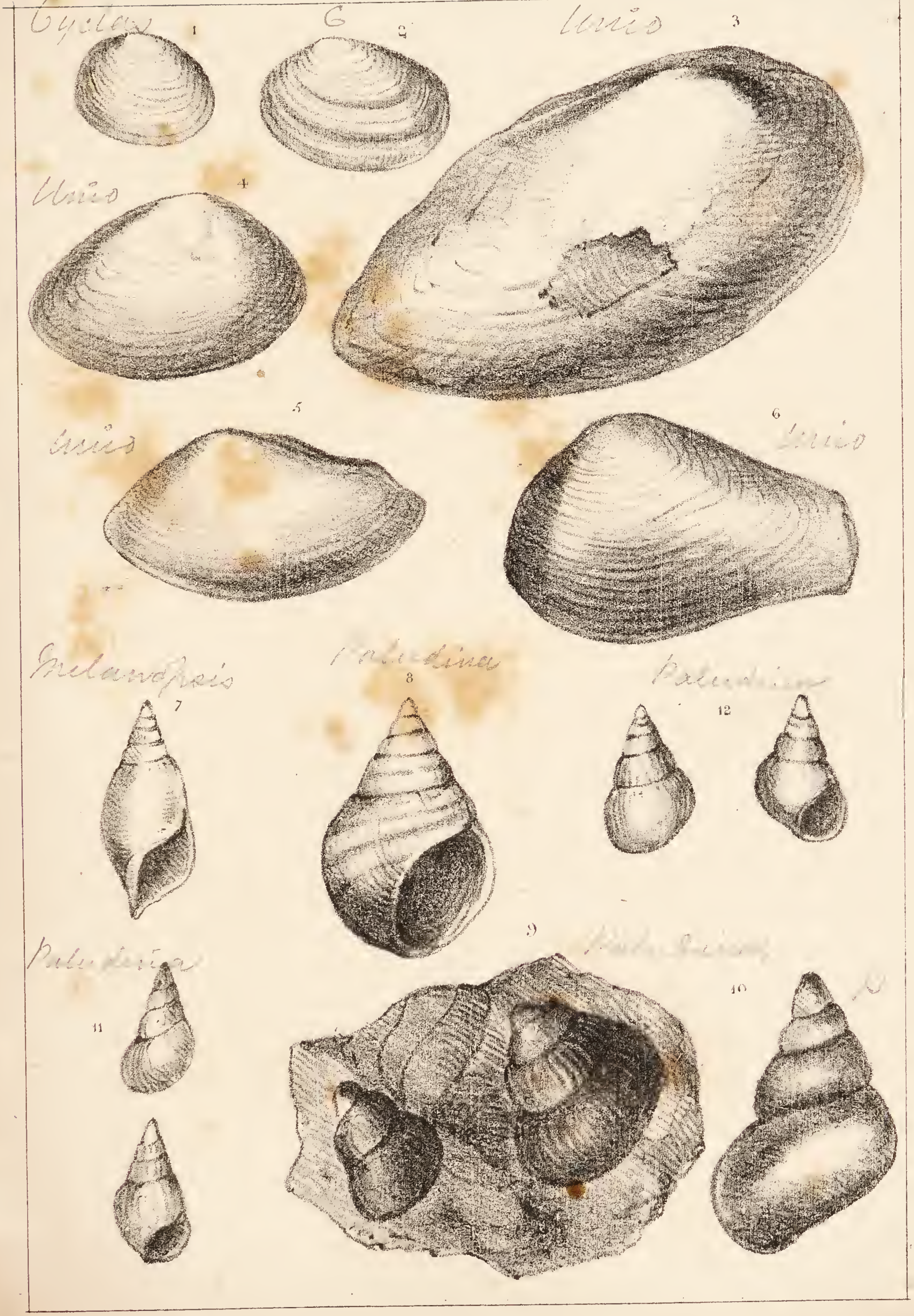
Index to Plate XIX.

1, Cyclas membranacea. 2, C. media. 3, Unio porrectus. 4, U. compressus. 5, U. antiquus. 6, U. aduncus. 7, Melanopsis carinata. 8, 9, 10, Paludina vivipara. 11, P. elongata. 12, P. caranifera.

References.

Mantell's Geology of Sussex——Mantell's Geology of the Southdowns, 4to 1822——Fossils of Tilgate Forest, 4to 1827——Memoir by Dr Mantell in Phil. Tran. 1825——De la Beche's Geology, p. 304——Geological Sketch of the vicinity of Hastings 1833——Martin's Geology of Western Sussex.

WEALDEN ROCKS. PLATE. XIX.



Oolitic Group.

This important group of rocks, consists of the following members, viz.

1. Kimmeridge Clay
2 Coralline Oolitie
3. Calcareous Grit
4. Oxford Clay
5. Kelloway Rock
6. Cornbrash
7. Forest Marble
8. Great Oolite
9. Fuller's Earth
10. Inferior Oolite
11. Marlstone
12. Lias

For these two last we have prepared separate plates on account of their great importance, both as to range and numerical contents. The limits of this work naturally exclude any lengthened description of these beds, suffice it therefore to state, that, if the great, even immense multitude of organic remains of marine testacea afford any criterion whereby to form an opinion as to their origin, this must have taken place from sudden and successive irruption of a destructive fluid.

Numerical Estimate of contents.

Polypi	128	Crustacea	12
Radiaria	70	Annulata	44
Conchifera	352	in all 896 species,	
Mollusca	290		

as well as the remains of plants, insects, fishes, reptiles, and mammalia.

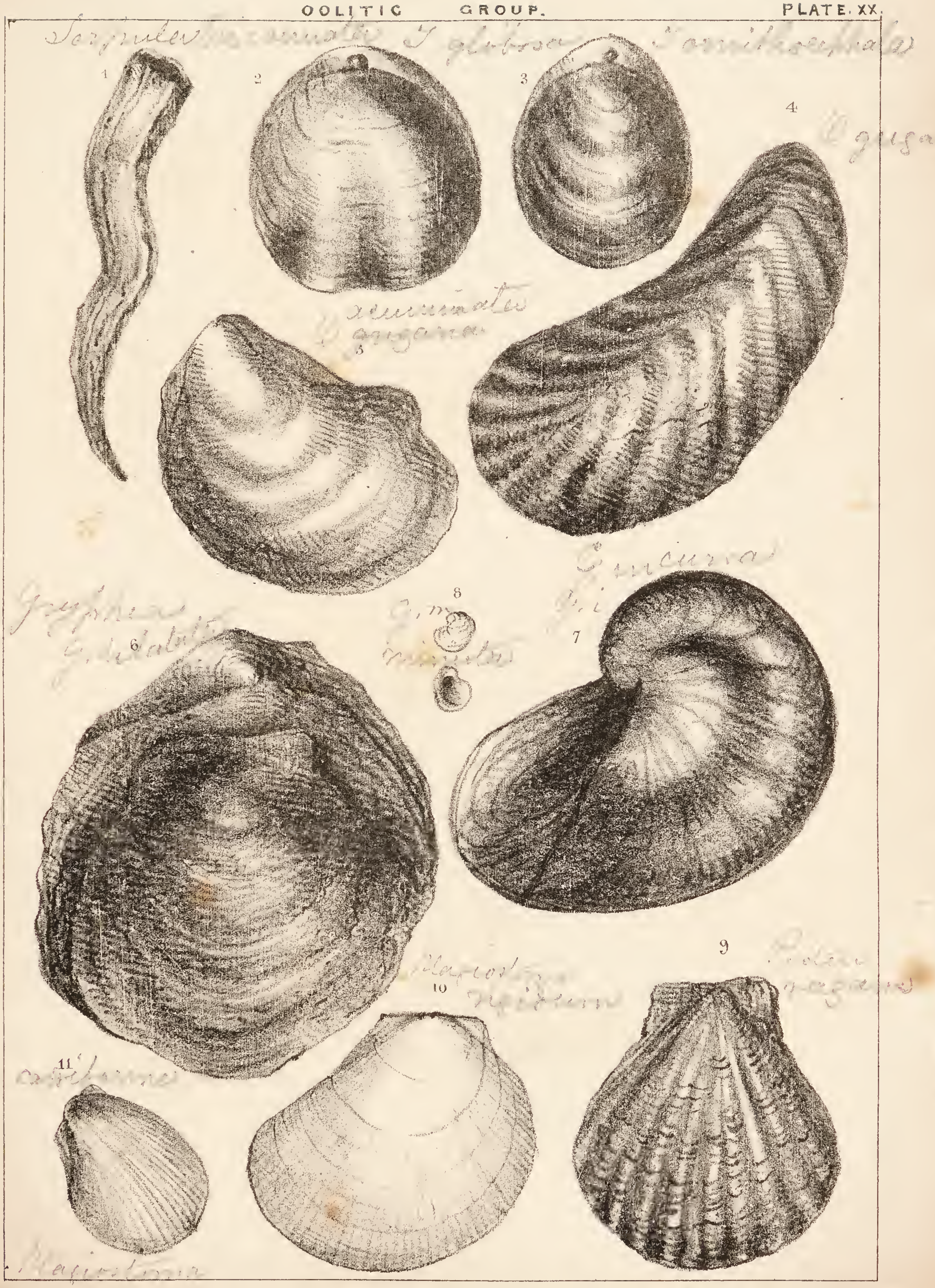
Index to Plates XX. XXI. XXII.

Plate XX.—1, Serpula tricarinata. 2, Terebratula globosa. 3, T. ornithocephala. 4, Ostrea gregarea. 5, O. acuminata. 6, Gryphœa dilatata. 7, G. incurva. 8, G. minuta. 9, Pecten vagans. 10, Plagiostoma rigidum. 11, P. cardiiforme.

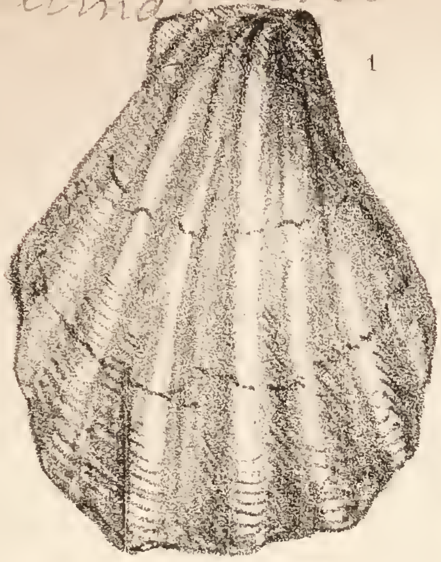
Plate XXI.—1, Lima rudis. 2, L. proboscidea. 3, Avicula ovalis. 4, A. inæquivalvis. 5, Gervillia aviculoides. 6, Pinna lanceolata. 7, Modiola plicata. 8, Trigonia costata. 9, T. gibbosa. 10, Nucula variabilis. 11, Pectunculus minimus. 12, Hippopodium ponderosum.

Plate XXII.—1, Melania striata. 2, Trochus punctatus. 3, Belemnites abbreviatus. 4, B. elongatus. 5, B. compressus. 6, Nautilus lineatus. 7, Ammonites Kœnigi. 8, A. striatulus. 9, A. annulatus. 10, A. discus. 11, A. quadratus. 12, A. Parkinsoni. 13, A. lœviusculus. 14, A. corrugatus. 15, A. falcifer. 16, A. Calloviensis.

OOLITIC GROUP. PLATE. XX.



Lima rudis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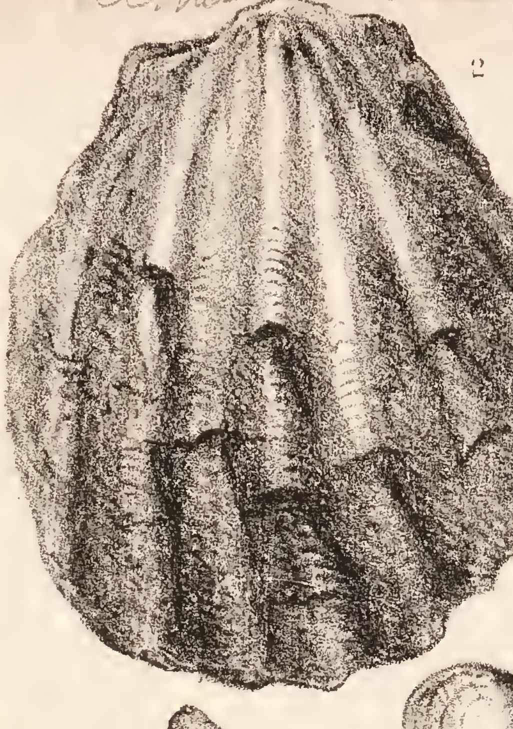
Lima proboscidea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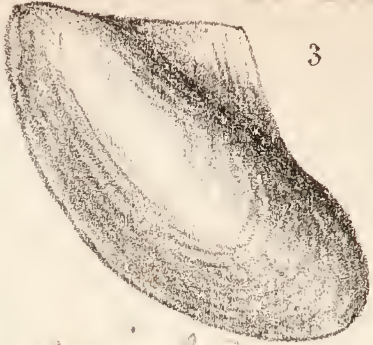
avicula [illegible]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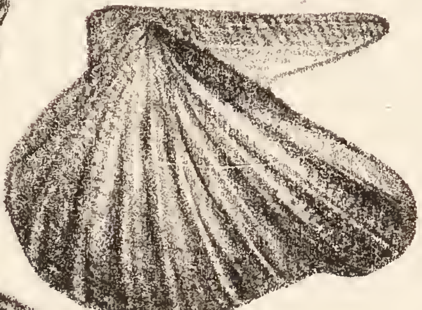
avicula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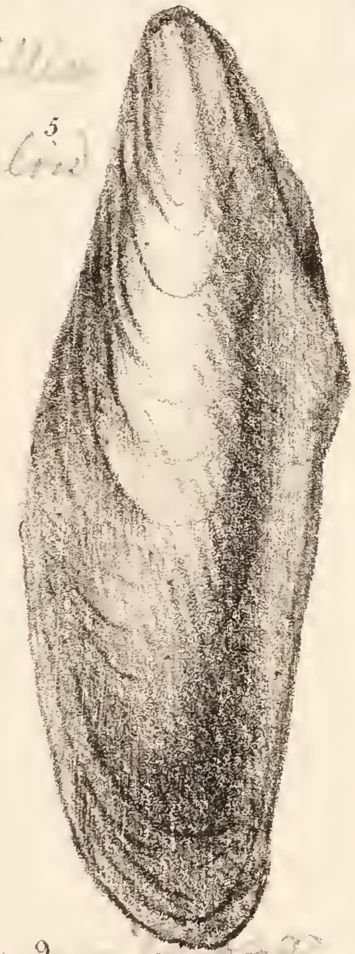
Gervillia aviculoides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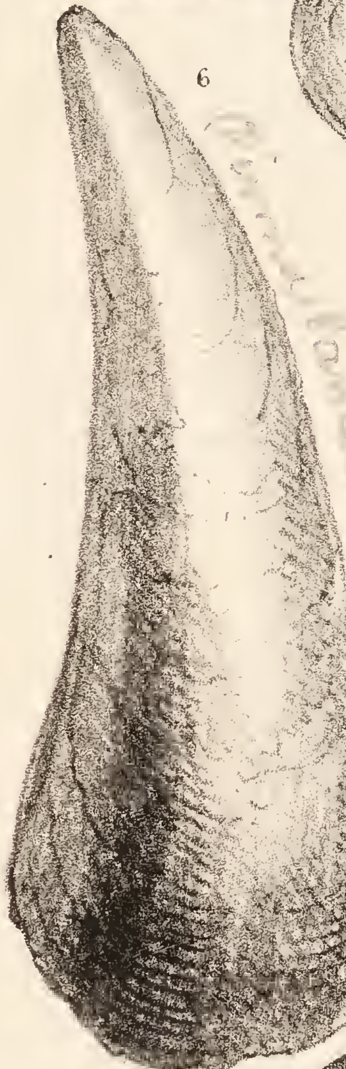
Pinna lanceolata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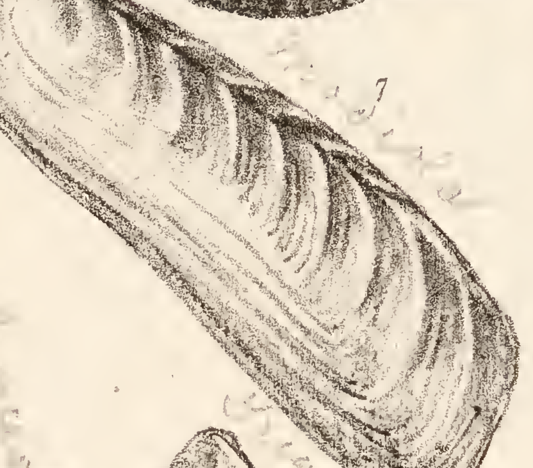
Modiola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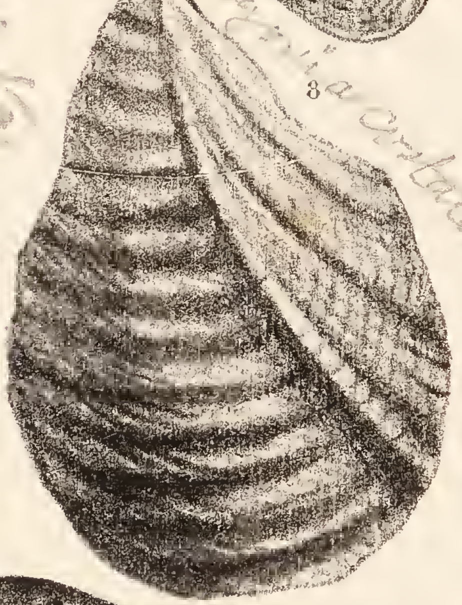
Trigonia costata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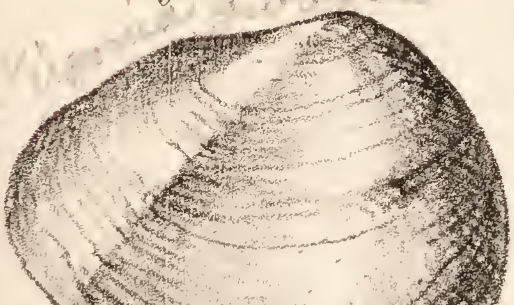
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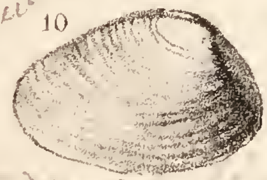
Nucula [illegible]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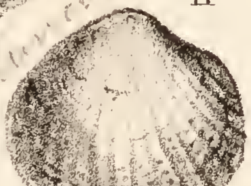
Pectunculus minimus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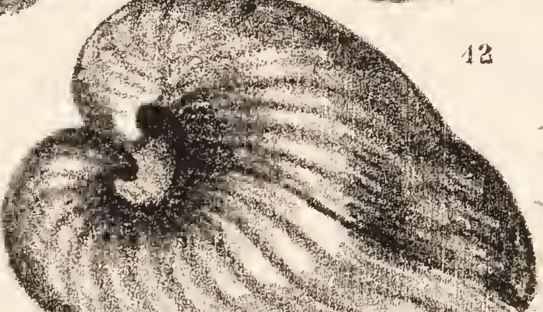
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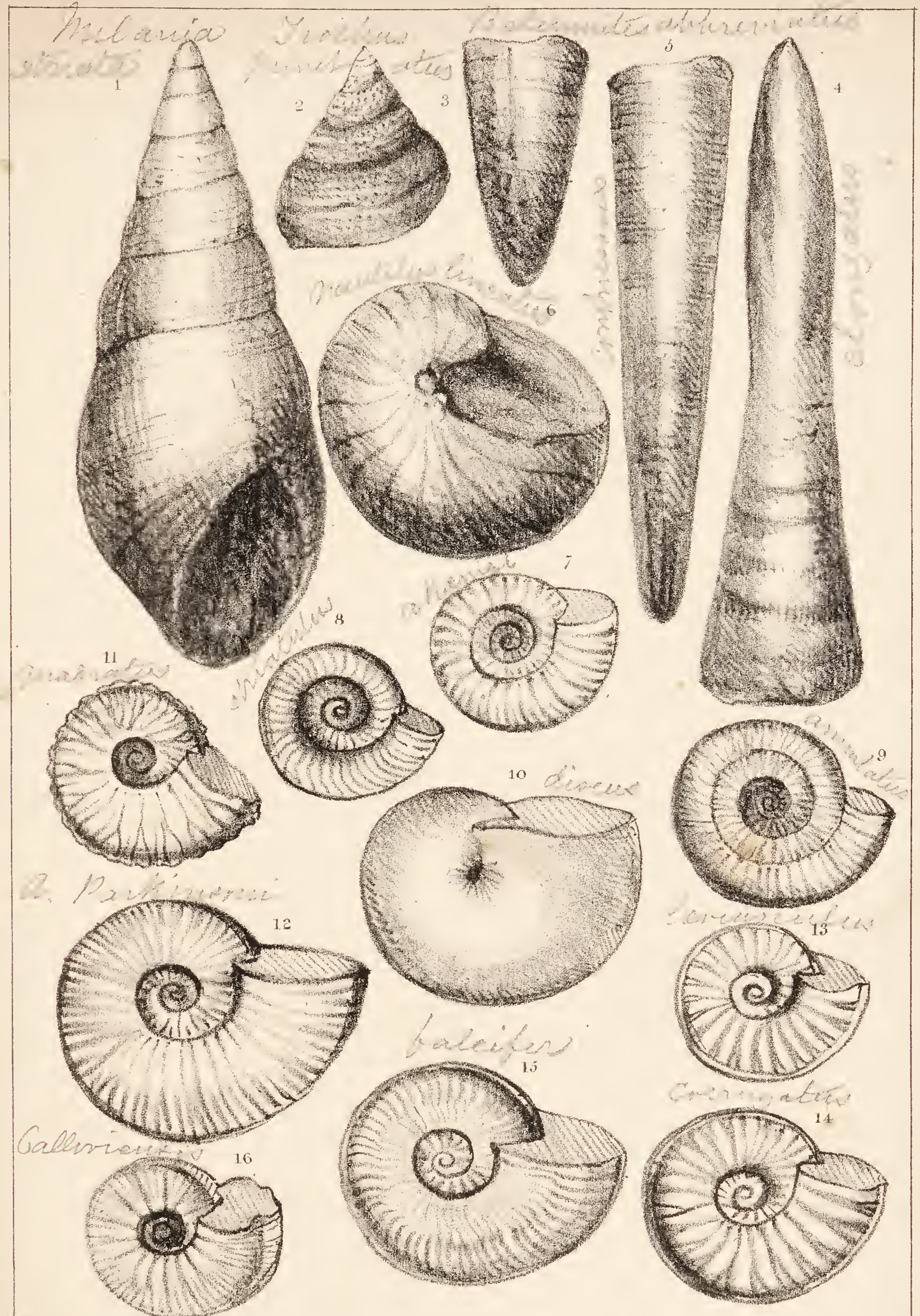

Melania striata
Trochus punctatus
Belemnites abbreviatus
1
2
3
5
4
acuarius
Nautilus lineatus
6
Herveyi
7
striatulus
8
11
granulatus
annulatus
9
10
discus
A. Parkinsoni
12
13
falcifer
15
Corrugatus
14
Calloviensis
16

Lias Beds

These beds form a portion of the oolitic group, under which head, the aggregate estimate of fossil contents will be found. The lias group consists of the lias shales, (Upper and Lower) Marlstone, and true lias.

Index to plates XXIII & XXIV,

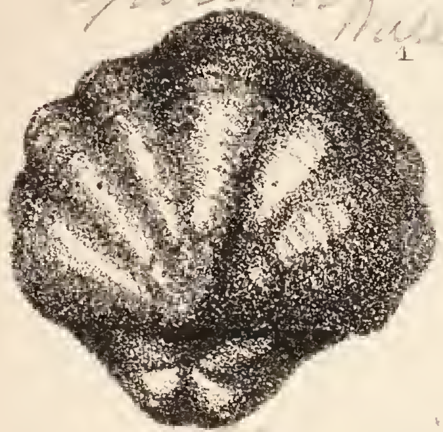
PLATE XXIII—**1**, Spirifer Walcottii. 2, T. resupina. 3, T. tetraeda. 4, Gryphœa incurva. 5, Cardium truncatum. 6, Helicina expansa. 7, Pecten —— 8, Arca-species undetermined. 9, Hippopodium divaricatum (Buckman). 10, Avicula inæquivalvis (var. B). 11, Belemnites ovalis. 12, Alveolus of B. ovalis. 13, Trochus similis. (reduced.)

PLATE XXIV—**1**, Ammonites Heterophyllus. 2, A. fibulatus. 3, A. communis. 4, A. Bucklandii. 5, A. Buckmanii. * 6, A. Murleyii. †

* *Ammonites Buckmanii*—This hitherto undescribed Ammonite is from the lias Marlstone, in the neighbourhood of Cheltenham, and was kindly forwarded to us by Mr. James Buckman, a zealous naturalist, resident in that neighbourhood, to whom we are happy to pay this inadequate tribute. *Spec: Char:*--Discoid, radiated, inner whorls fully exposed, radii large, twice curved, regular, clearly terminated at each end, keel prominent, aperture oval.

† *Ammonites Murleyii*--An undescribed species from the upper lias shale. We are indebted to Mr, J. Buckman for this figure, and in accordance with his wish, have much pleasure in naming it as above.

Spec: Char:--Discoid, radiated, inner whorls fully exposed, radii large, regular, and indistinctly twice curved and terminated, keel prominent and slightly furrowed, aperture broadly ovate.

1


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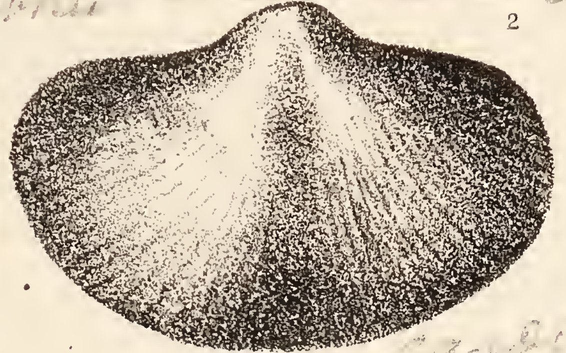

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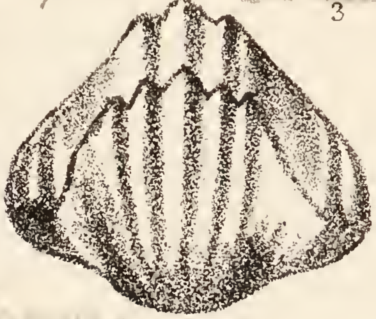

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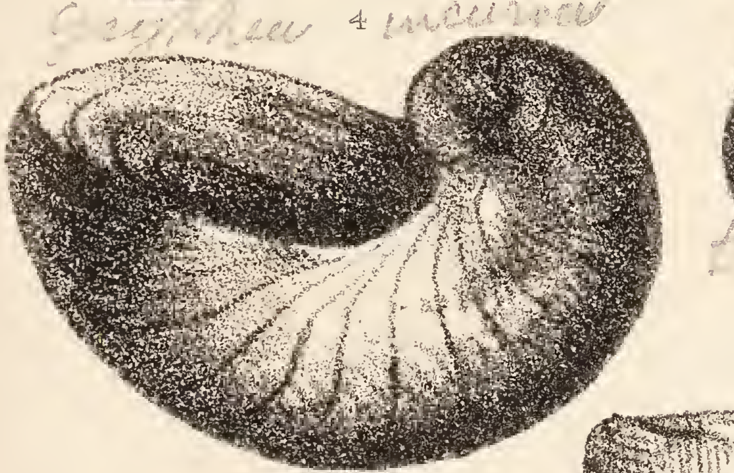

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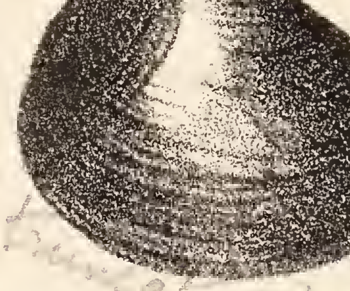

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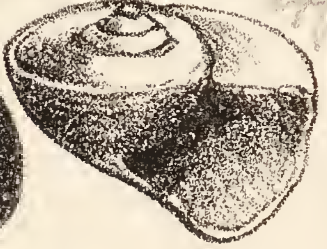

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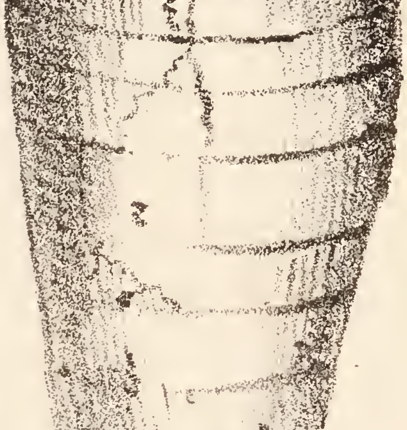

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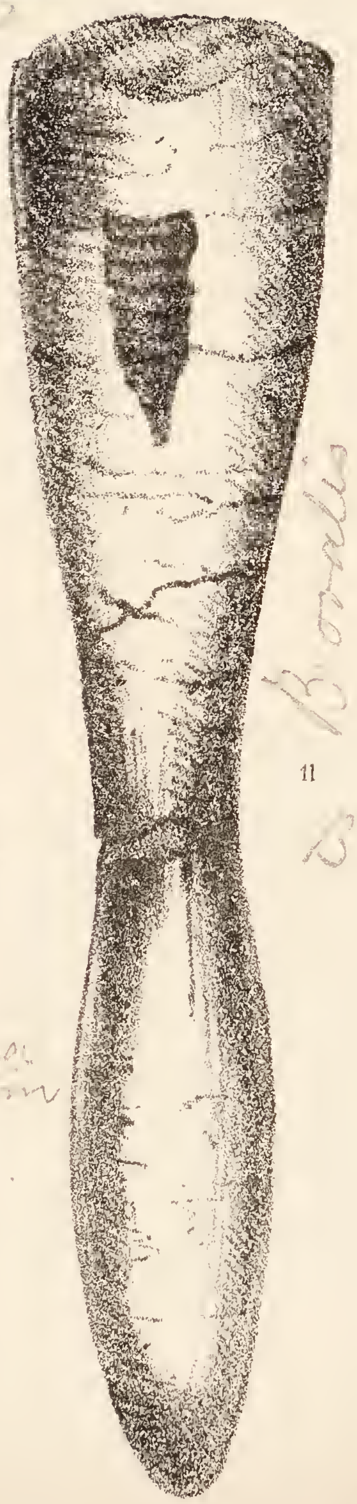

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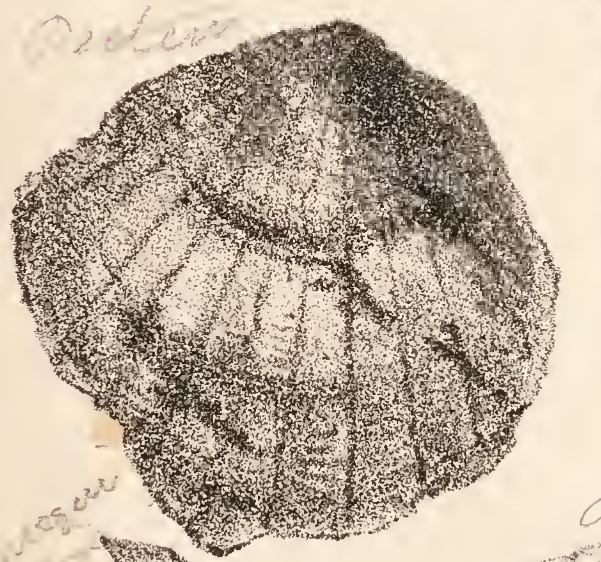

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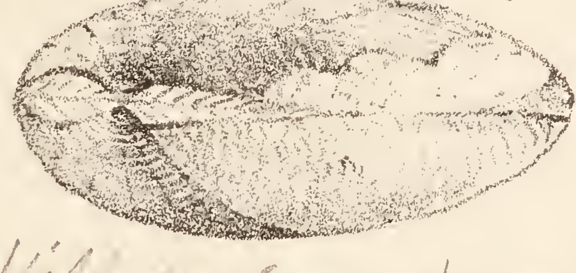

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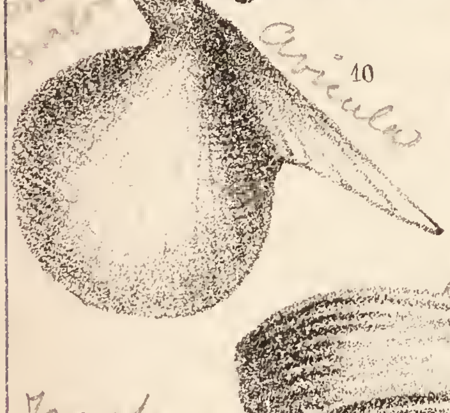

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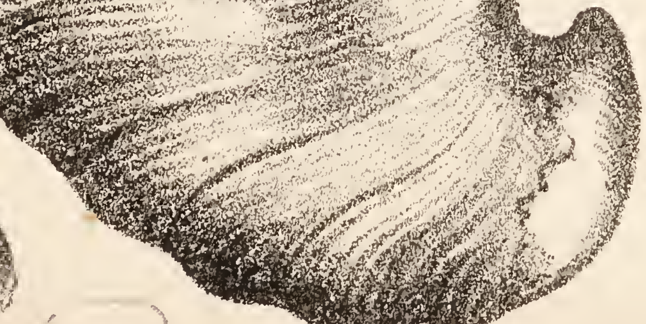

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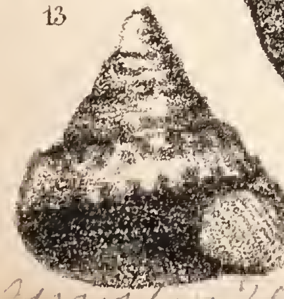
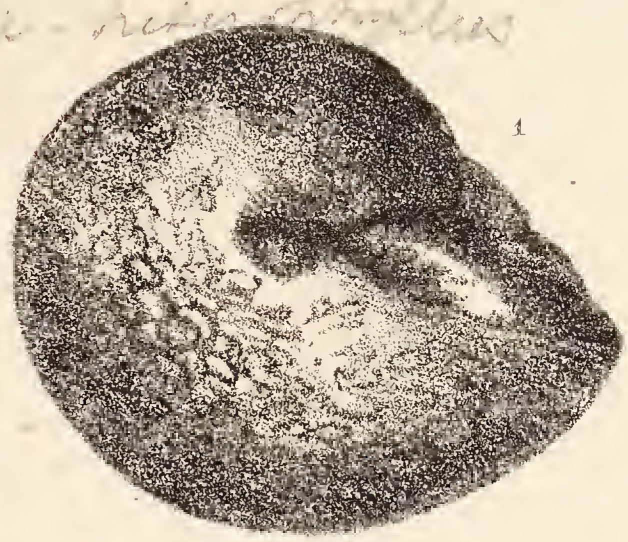


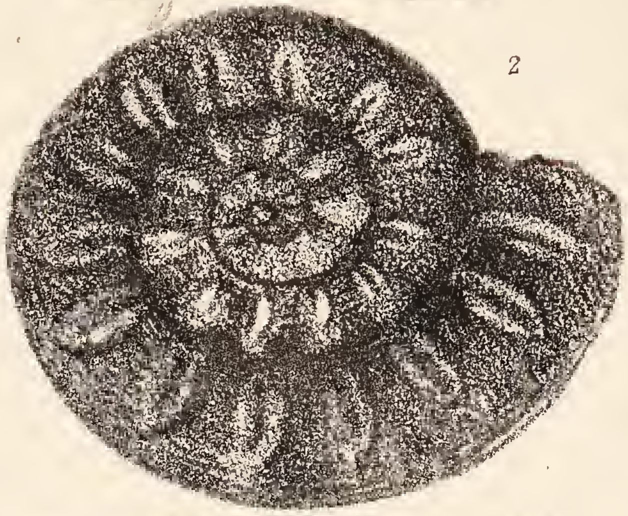
LIAS BEDS. PLATE. XXIV.

a. heterophyllus



1

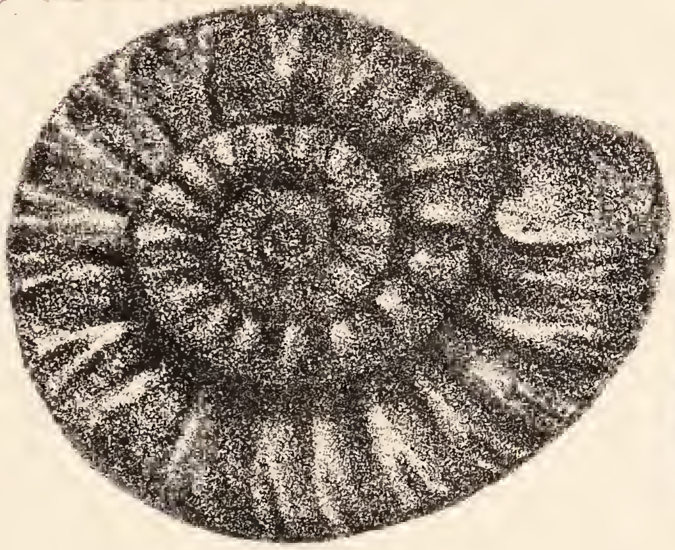
a. fibulatus



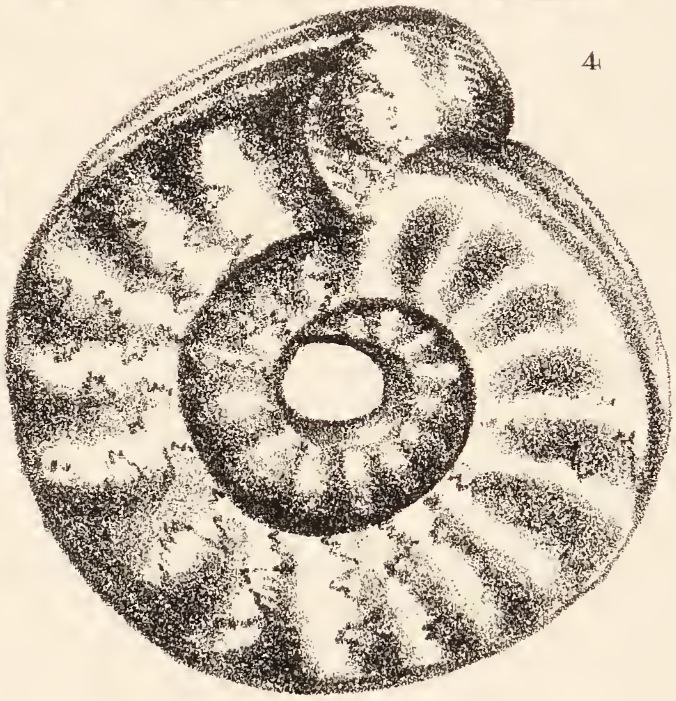
2

a. communis

3



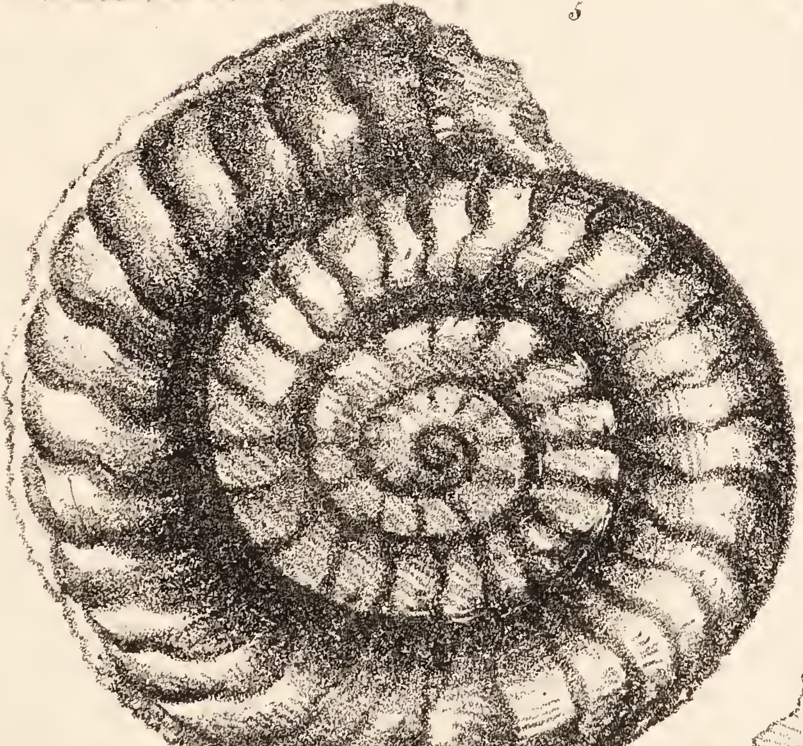
a. Bucklandi



4

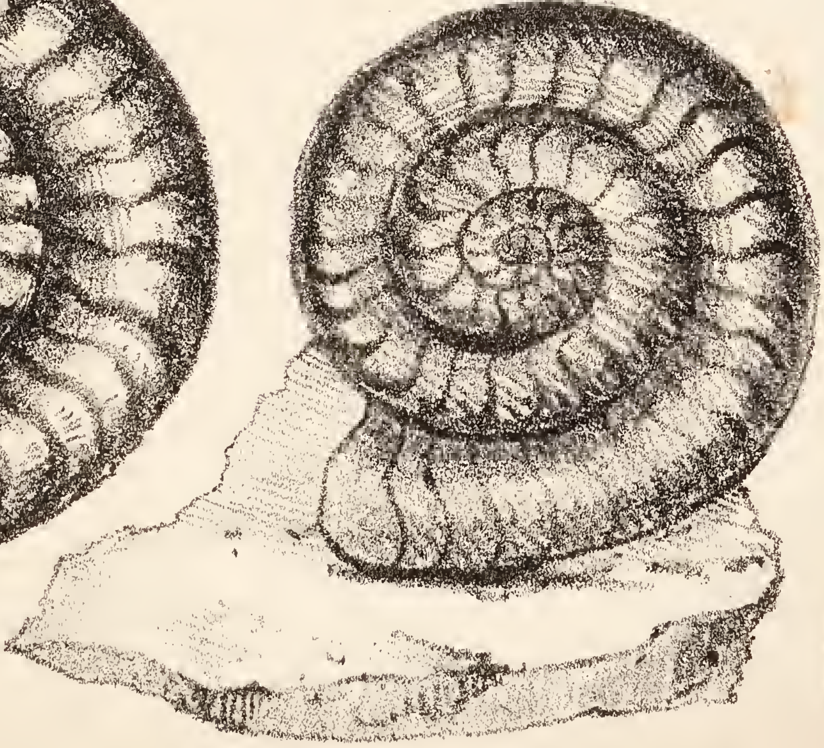
a. Bucklandii

5



a. Burleyi

6



Red Sandstone Group.

This group consists of coloured marls,—sandstones, Gypseous red marls—magnesian limestone and red sandstone—containing in some cases numbers of fossil fish, and likewise vegetable remains common in the subjacent coal beds.

Numerical Estimate of contents.

Polypi	7	Conchifera	14
Radiaria	3	Mollusca	4
Crustacea	0		
Annulata	0		

— 28 species.

and also remains of 9 plants—fishes—and one reptile.

Index to Plate XXV.

1, Terebratula perovalis. 2, Spirifer undulatus. 3, Producta aculeata. 4, P. calva.
5, Axinus obscurus. 6, Arca tumida. 7, Turbo ornatus. 8, Nautilus pentagonus.

Carboniferous Group.

Containing the Coal measures, layers of flagstone and ironstone, limestones and old red sandstone. The shells are mostly of æstuary origin, and the plants of terrestrial but now extinct genera.

Numerical Estimate of contents.

Conchifera	14	Mollusca	10

— 24 species.

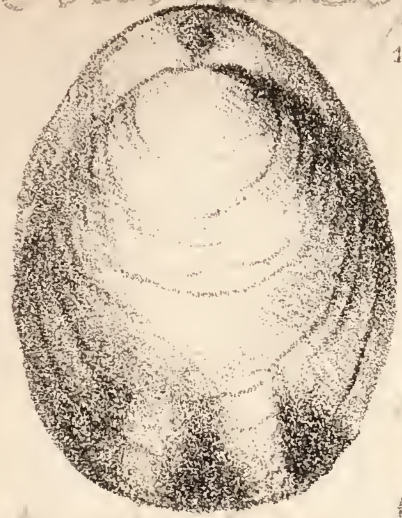
whilst of Plants upwards of 111 species have been found in the Coal beds of Great Britain.

Index to Plate XXVI.

1, Pecten papyraceus. 2, Unio uniformis. 3, U. subconstrictus. 4, Turritella elongata.
5, Bellerophon apertus. 6, Orthoceras Steinhaueri. 7, Ammonites Listeri. 8 A. sphæricus.

Terebratula [illegible] Spirifer undulatus

1



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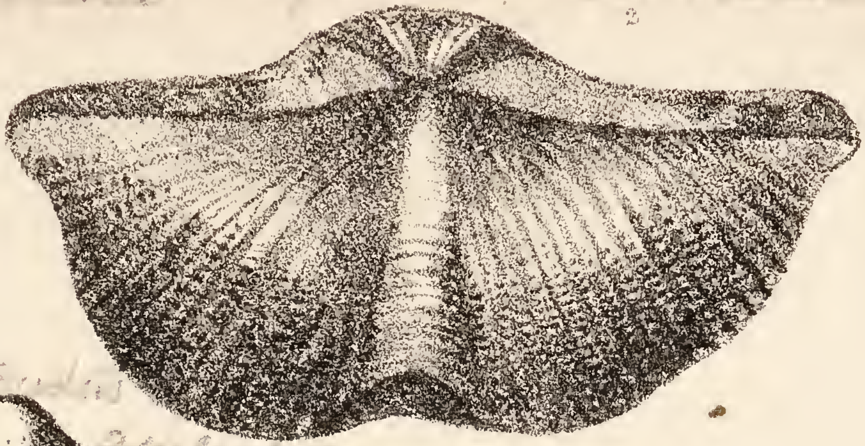
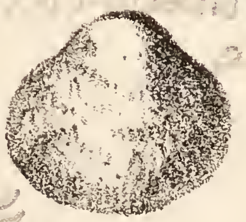


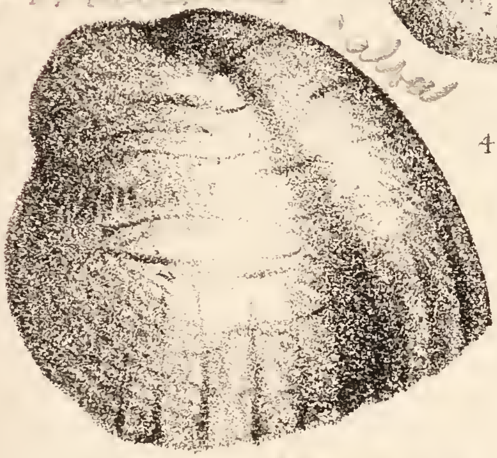
3

Productus [illegible]



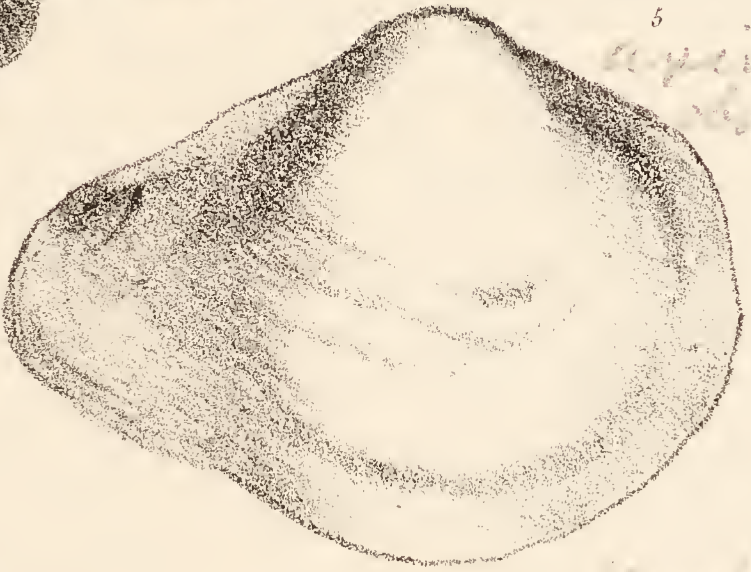
Productus [illegible]

4

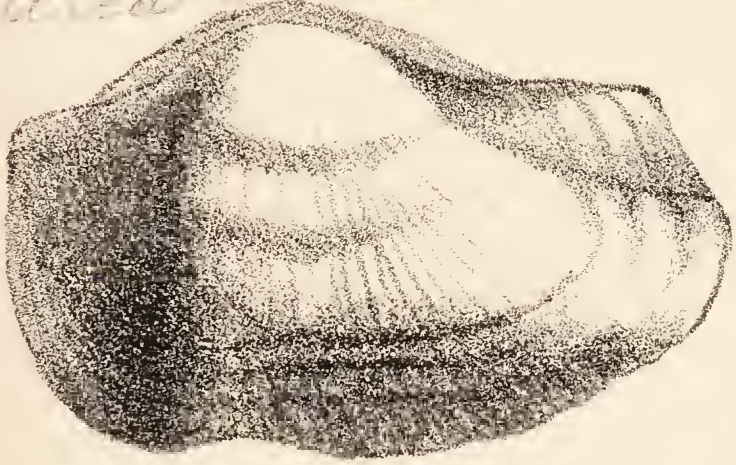


5

Axinus obscurus



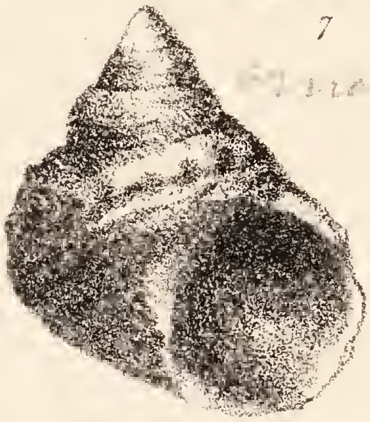
Arca tumida 6



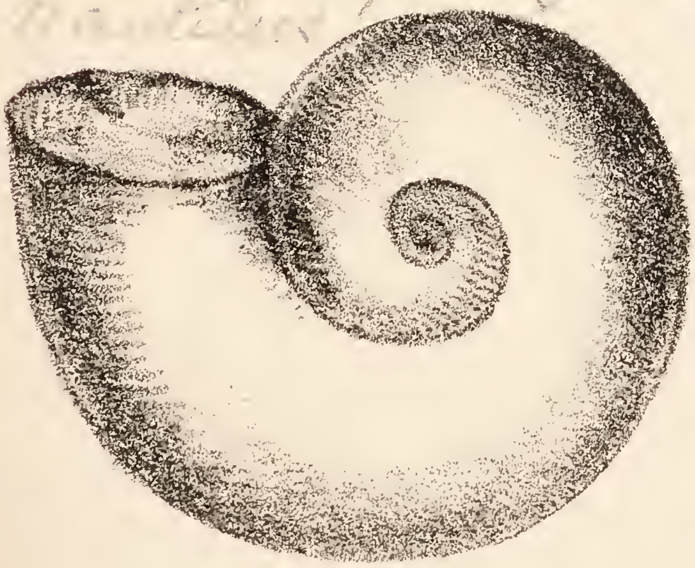
Turbo

7

[illegible]



Nautilus [illegible] 8



Carboniferous Limestone.

The universal character of this rock, is that of a compact limestone, (abounding with calcareous spar and lead ore) through which the fossil remains are very unequally distributed—its colour is grey, of various shades;—the fossils are of marine origin, and the plants are similar to those found in the Coal measures.

Numerical estimate of Contents.

Polypi, &c.	27	Annulata	2
Radiaria	21	Crustacea	7
Conchifera	85	Plantæ, &c. Fish.	
Mollusca	70		

212 Species.

Index to Plate XXVII.

1, Serpula compressa. 2, Spirifer ambigua. 3, S. triangularis. 4, S. striatus. 5, S. cuspidatus. 6, Terebratula crumena. 7, T. Fimbria. 8, Producta antiquata. 9, Pr. gigantea. 10, Nucula Palma. 11, Euomphalus rugosus. 12, Turbo Tiara. 13, Orthoceras undulatus.

Grauwacke (or Grouwacke) Group.

This series of arenaceous and slaty rocks may be considered the lower portion of the *Old Red Sandstone*, and consequently claims the same derivation—being composed of very comminuted particles; the variety in structure of the laminæ, proves also, that the deposition of these rocks must have been slow.

Numerical estimate of contents.

Polypi, &c	68	Mollusca	116
Radiaria	26	Annulata	4
Conchifera	66	Crustacea	53

also plants, allied to those found in the Coal measures.

Index to plate xxviii.

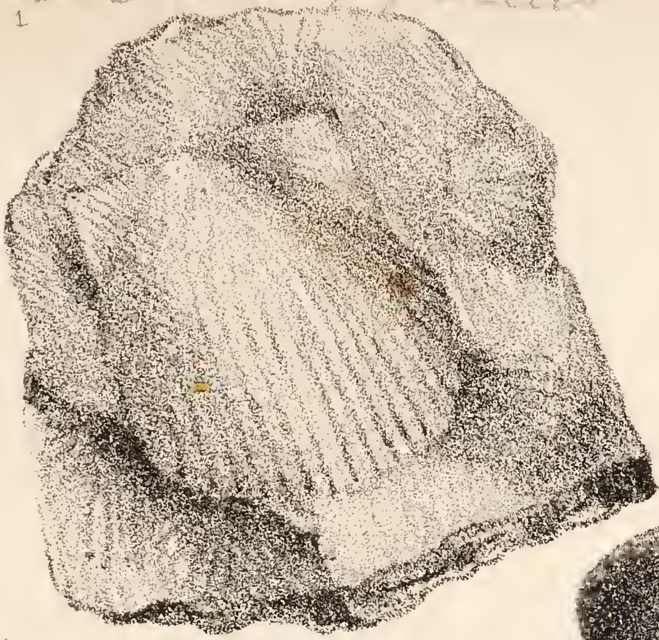
1, Pentamerus Knightii. 2, Spirifer lineatus. 3, S. octoplicatus. 4, Terebratula Pugnus. 5, Producta concinna. 6, P. lobata. 7, Euomphalus Catillus. 8, Bellerophon tenuifascia. 9, Orthoceras circularis.

CARBONIFEROUS GROUP.

PLATE. XXVI.

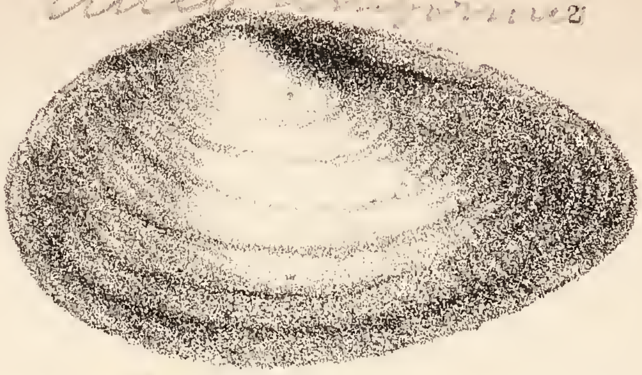
Pecten papyraceus

1



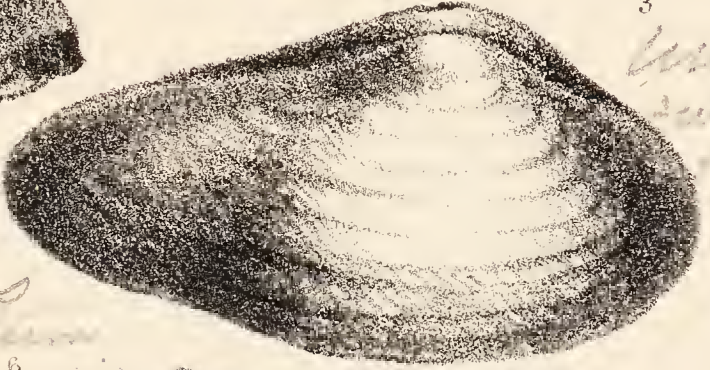
Unio uniformis

2



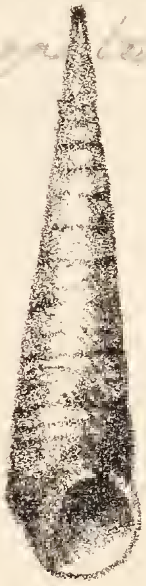
3

Unio subconstricta



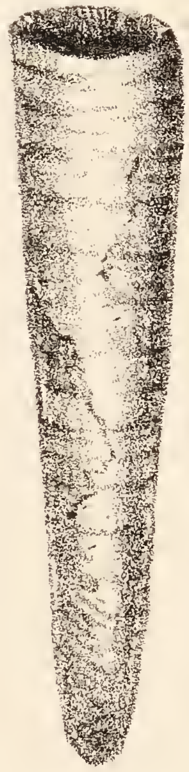
Turritella elongata

4



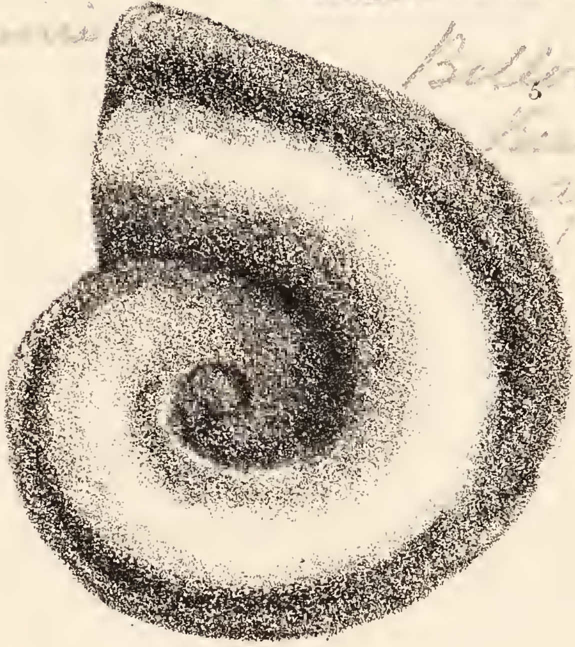
orthoceras Steinhauri

6



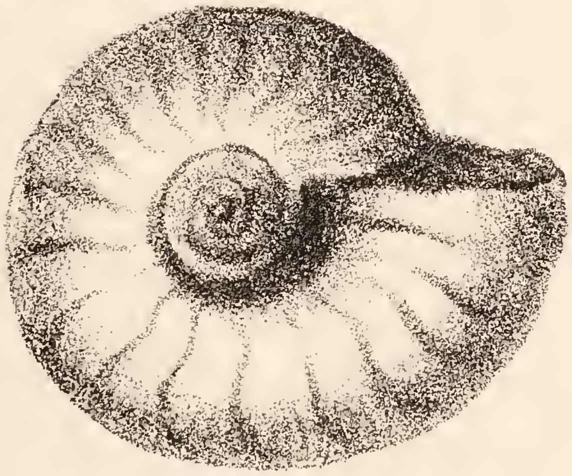
Bellerophon [illegible] [illegible]

5



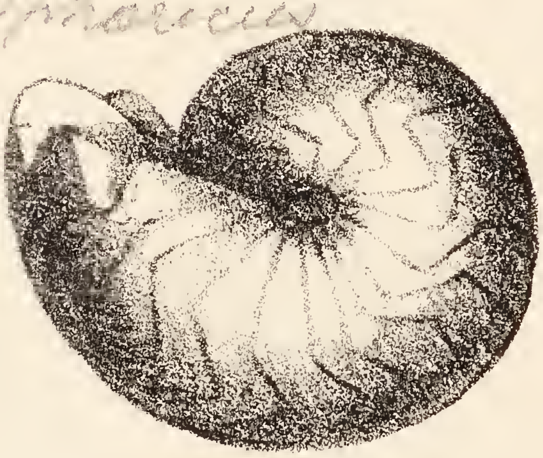
7

A. Listeri

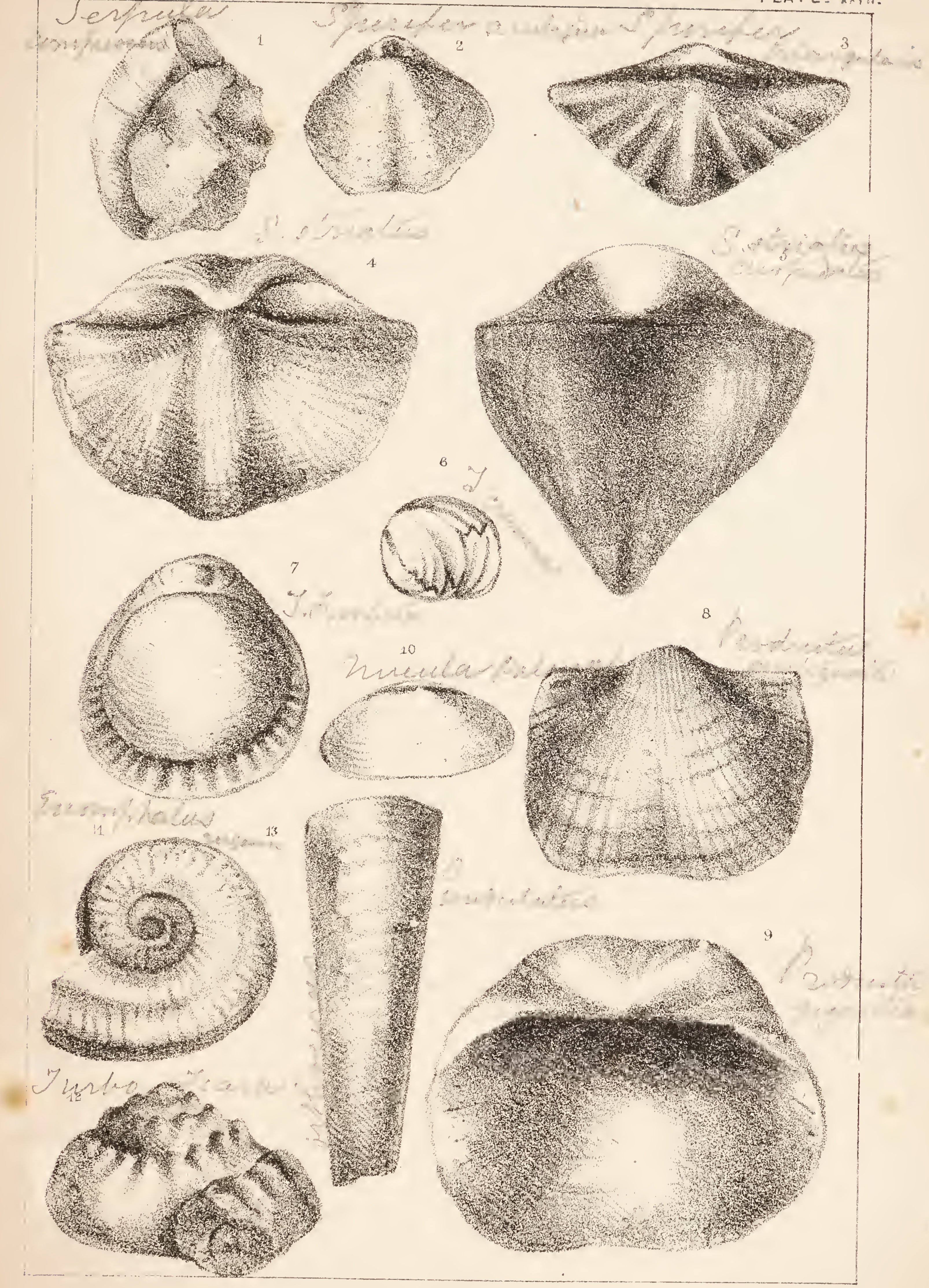


8

A. sphaericus



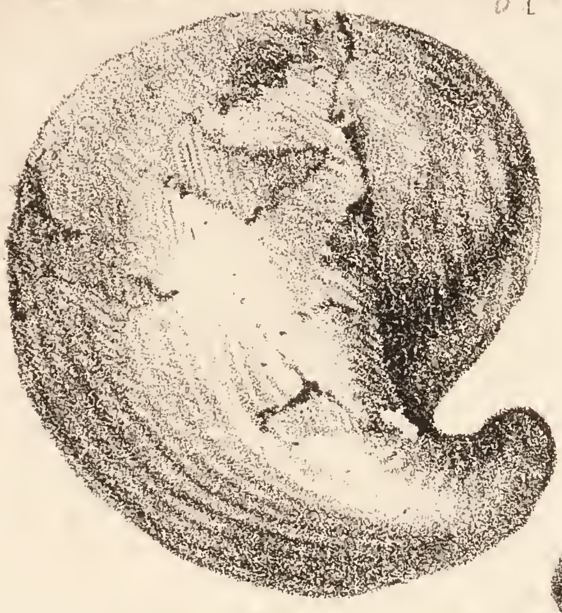
CARBONIFEROUS LIMESTONE PLATE XXVII.



GROUWACKE GROUP PLATE-XXVIII

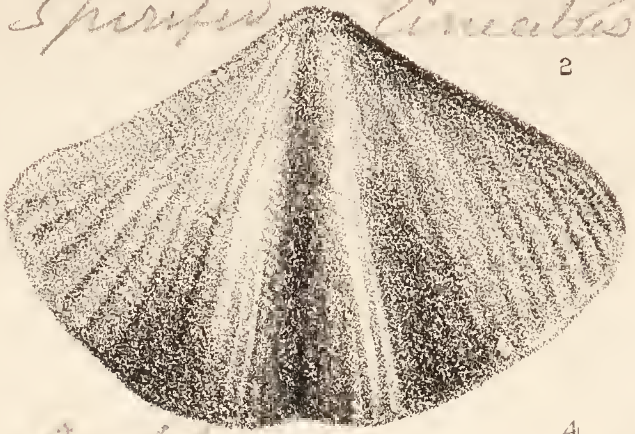
Pentamerus knightii

1

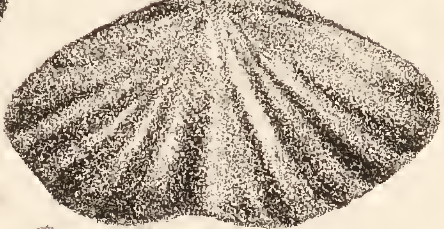


Spirifer lineatus

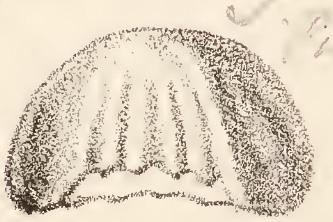
2



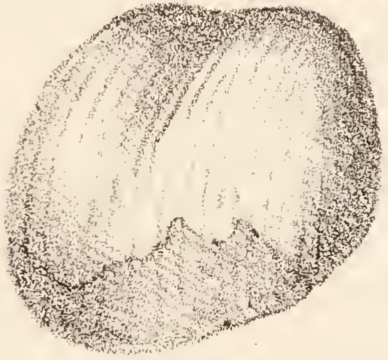
3 S. octoplicatus



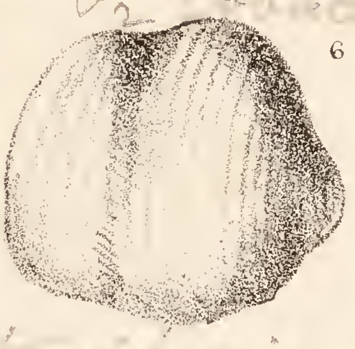
4 T. Pugnus



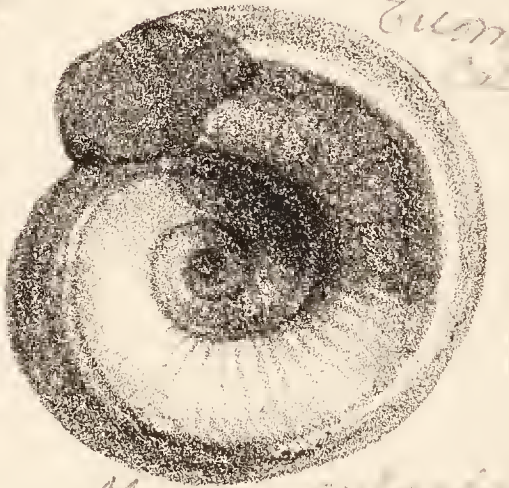
5 P. [illegible]



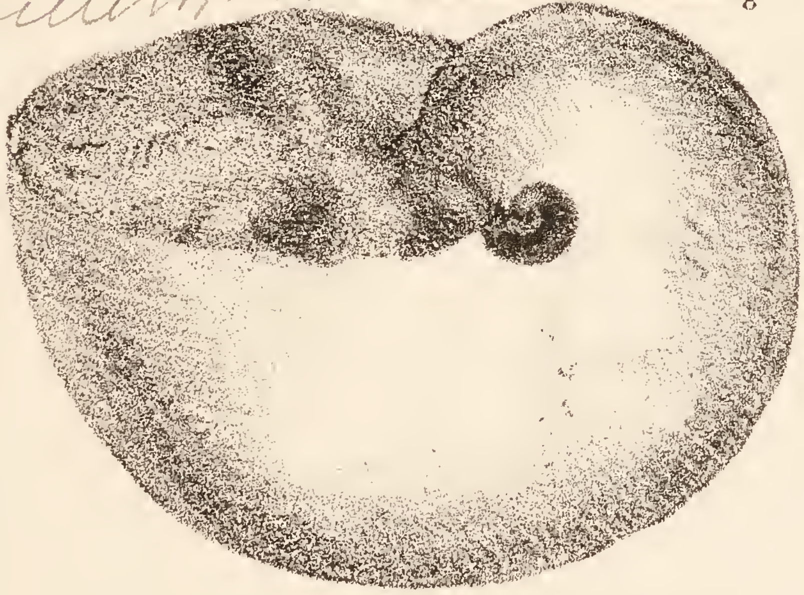
P. lobata 6



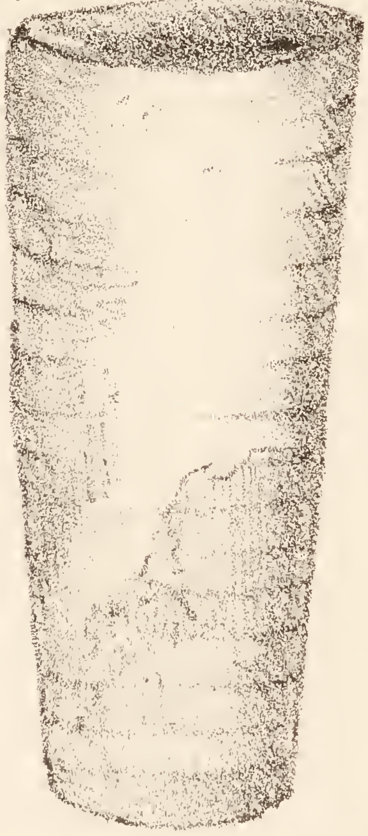
7 Euomphalus [illegible]



Bellerophon [illegible] 8



Ortho- [illegible] 9



SECTION II.

PLANTÆ.

PLATES XXIX & XXX.

Fossil Plantæ.

It is only in the lower stratified rocks, that fossils of this kind are found in any quantity ; and the whole number may be said to be in the coal measures and carboniferous group. The greater portion are of vascular cryptogamic plants, *(Equisitaceæ, Filices, &c.)* of very gigantic growth, which would indicate the state of temperature and climate, in the periods when they flourished, to have been much warmer than at present, whilst we should also infer that there was a plentiful supply of moisture—precisely analogous to the circumstances under which they now vegetate most thrivingly, both in tropical and more moderate climates. The number of fossil species of other plants is comparatively small, but amongst the number those of the natural order Coniferæ are most plentiful.

Index to Plates XXIX & XXX.

Plate xxix.—1, Odontopteris Brardii. 2, Lonchopteris Bricii. 3, Neuropteris gigantea. 4, Aspidium ? 5, Pecopteris lonchitica. 6, Sphenopteris artemisiafolia.

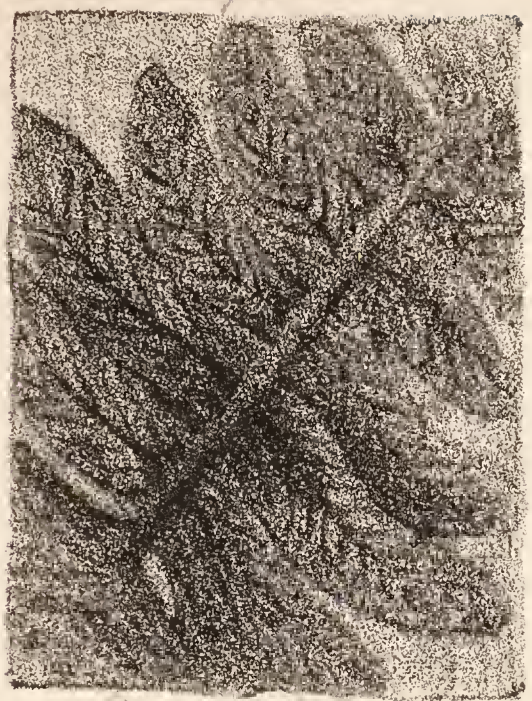
Plate xxx.—1, Sphenophyllum Schlotheimii. 2, Pterophyllum comptum. 3, Asterophyllites foliosa. 4, Cyclopteris orbicularis. 5, Portion of stem of Lepidodendron
6, do. Sigillaria pachyderma. 7, do. reniformis.

References.

Lindley and Hutton's Fossil Flora.... Witham's Observations on Fossil Vegetables, 1831.

Odontopteris

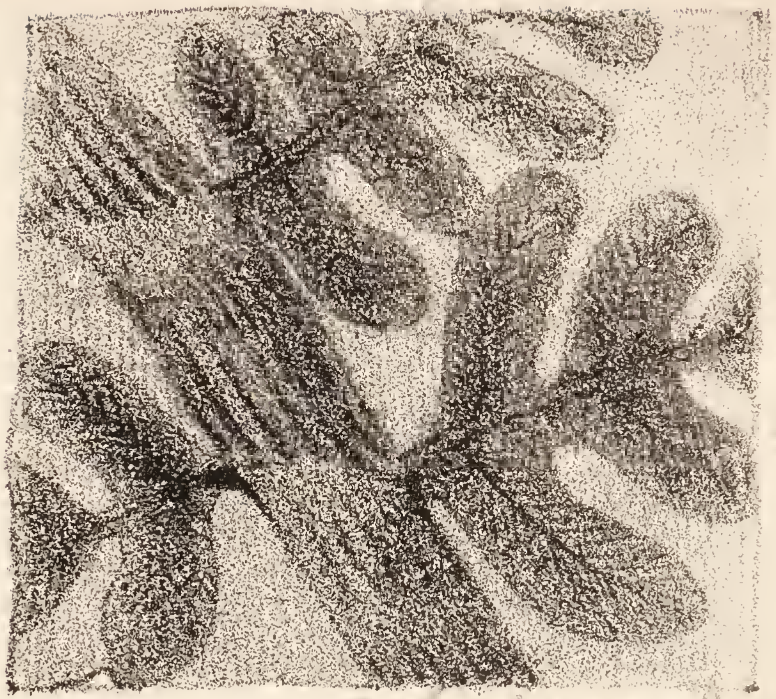
Brardii



1

Lonchopteris

Bricii

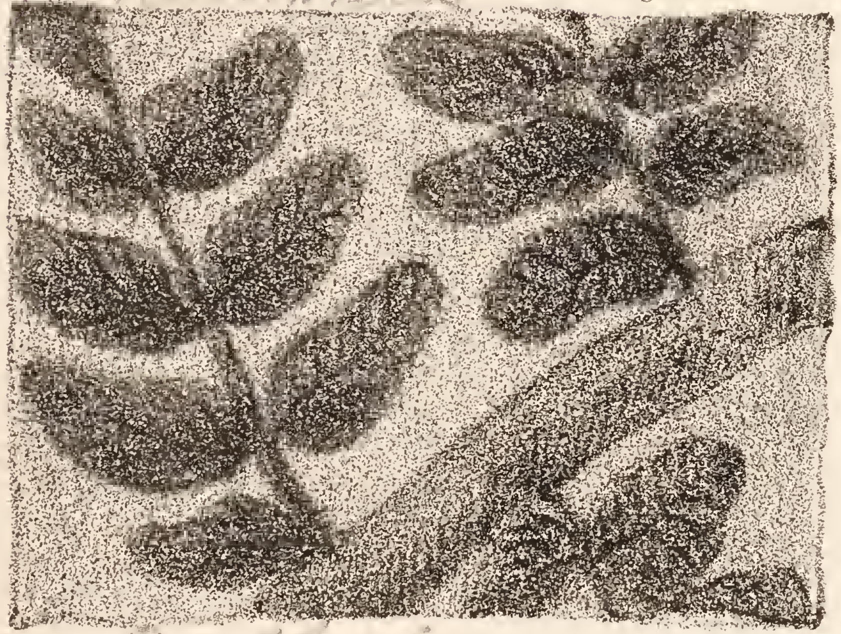


2

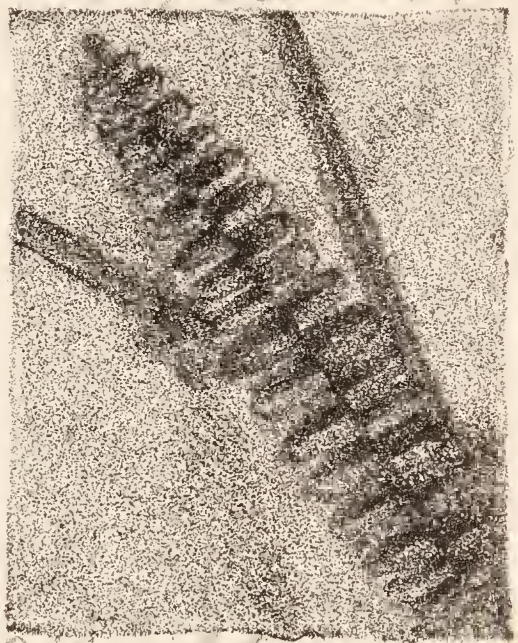
Neuropteris

gigantea

3



Aspidium?

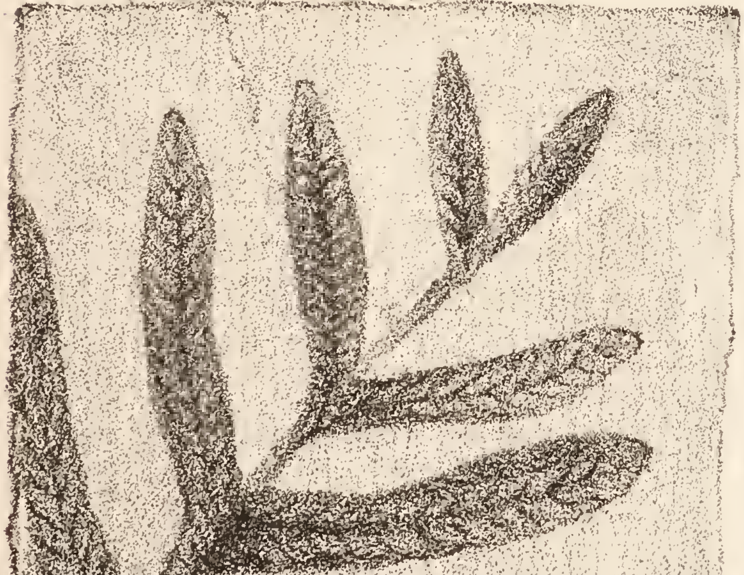


4

Pecopteris

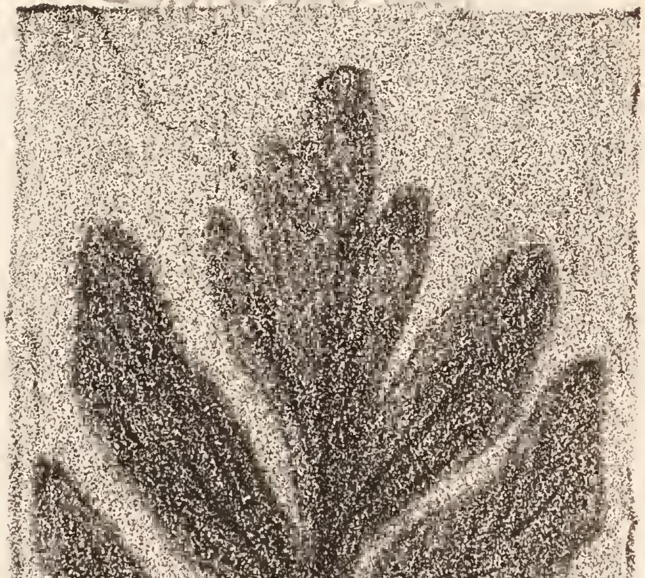
lonchitica

5



Sphenopteris

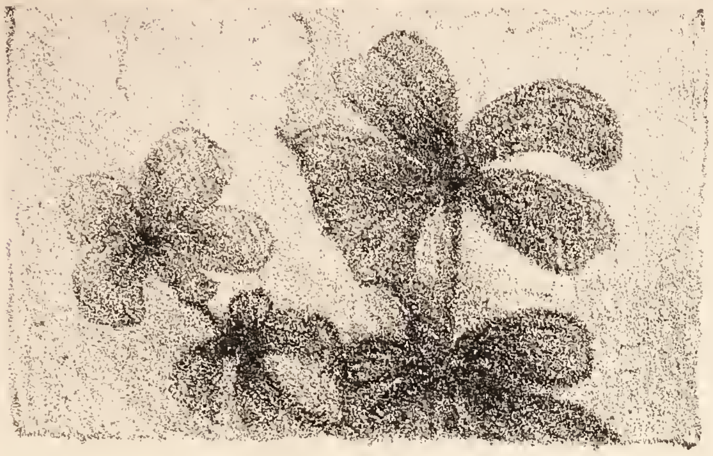
tenuifolia



6

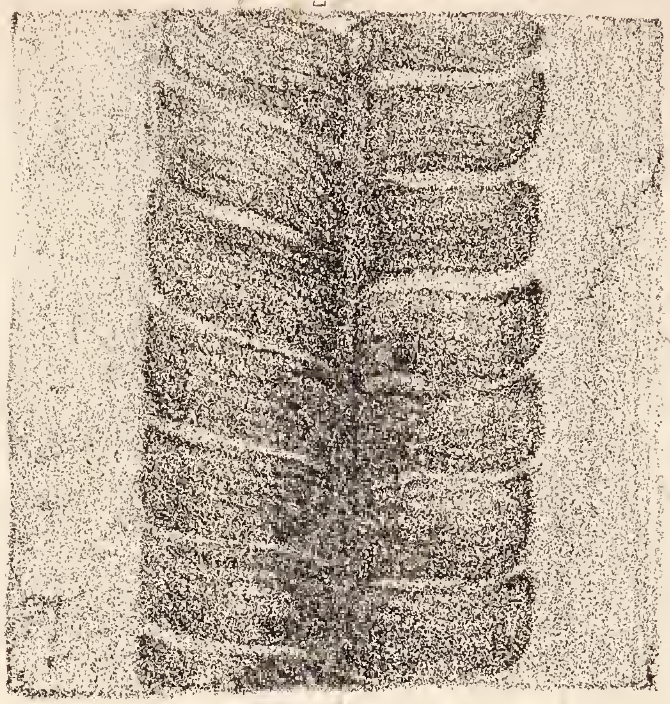
Sphenophyllum

1



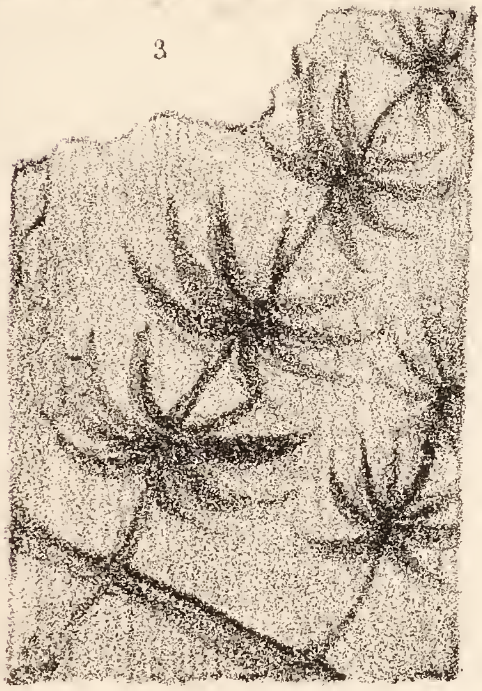
[illegible]

2



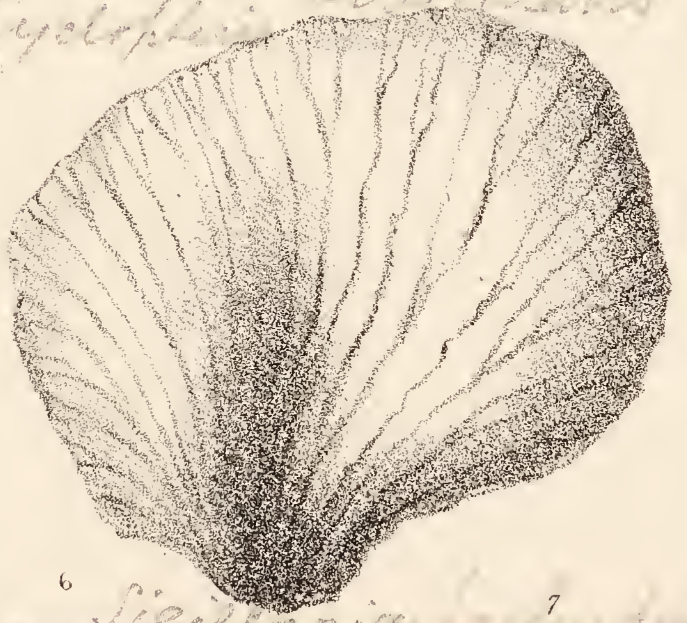
Asterophyllites foliosa

3



Cyclopteris [illegible]

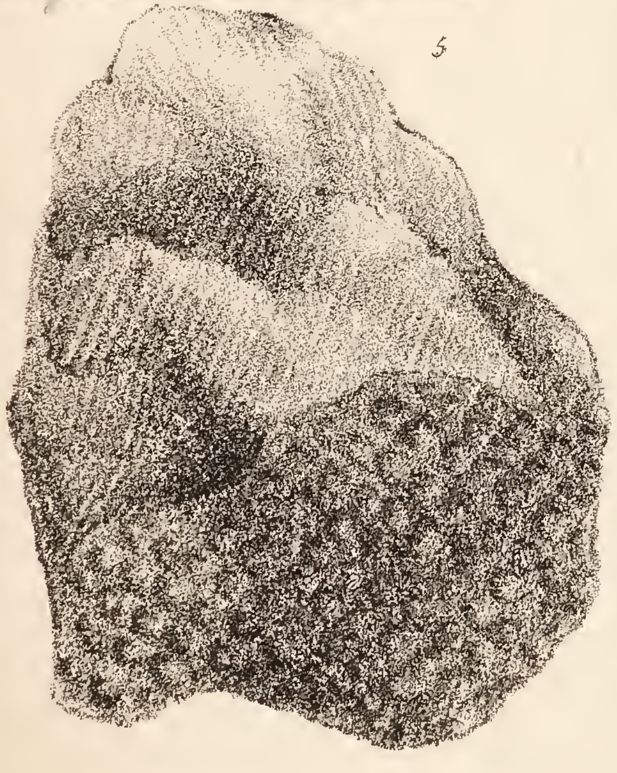
4



6

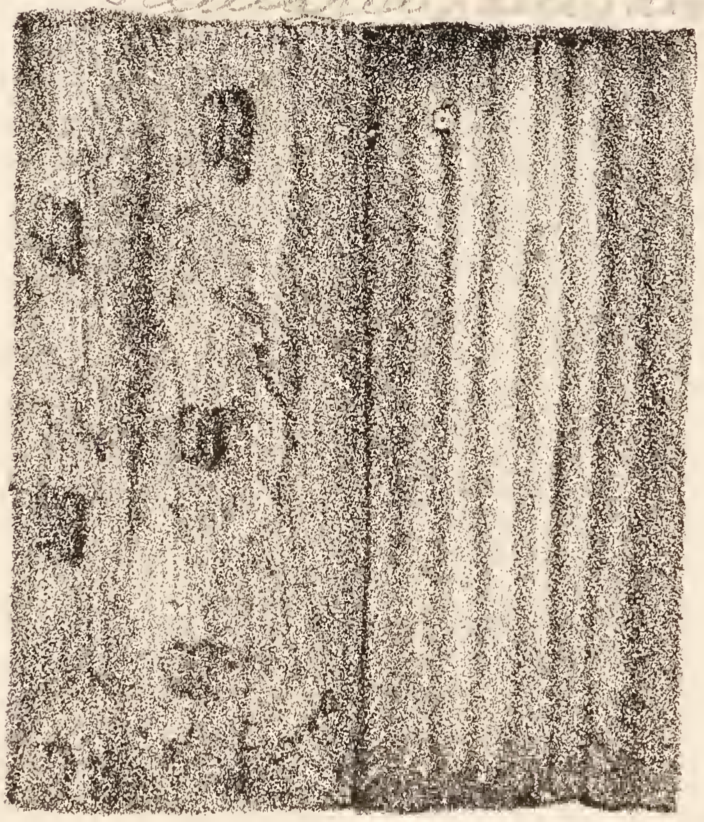
Lepidodendron

5



Sigillaria [illegible]

7



SECTION III.

MAMMALIA, REPTILIA, PISCES.

PLATES XXXI TO XXXIV.

Fossil Reptilia, Pisces, &c.

Amongst the most extraordinary discoveries of modern Geology, few deserve more consideration than the fossil remains of those immense animals and reptiles, which have now long since vanished from the surface of the Globe. The immense numbers in which they are found, and these being confined within a certain range of stratifications, prove that they existed in great quantities, to the great destruction of smaller tribes of marine animals, (as the "*Coprolites*" exemplify), and that their destruction must have taken place very rapidly. This argument holds good with respect to the Ichthyosauri and Plesiosauri; as regards the remainder of the Saurian tribe, the scattered fragments only indicate their size, whilst the situations in which their fossil bones occur, lead us to infer that their habits were the same as those of the other Saurians. The *Pterodactylus* also, although not sufficiently common to claim a position in this work, presents a very striking combination of amphibeous qualities and strength. Many subterranean caves also contain immense quantities of bones, which although of late date, are evidences of the prolific spread of animal life during certain periods.

The distribution of fossil fish needs no remark, as notices of their occurrence will be found in the Numerical estimate of Contents of each stratification or series.

Index to Plates XXXI, XXXII, XXXIII & XXXIV.

Plate XXXI.—1, Jaw of Megalosaurus. 2, Rib bone of same. 3, & 4, Teeth of Iguanodon. 5, Nasal horn of Iguanodon. 6, Plesiosaurus macrocephalus.

Plate XXXII.—1, Ichthyosaurus communis. 2, I. intermedius. 3, Tooth of Ichthyosaurus. 4 & 5, Coprolite and Section.

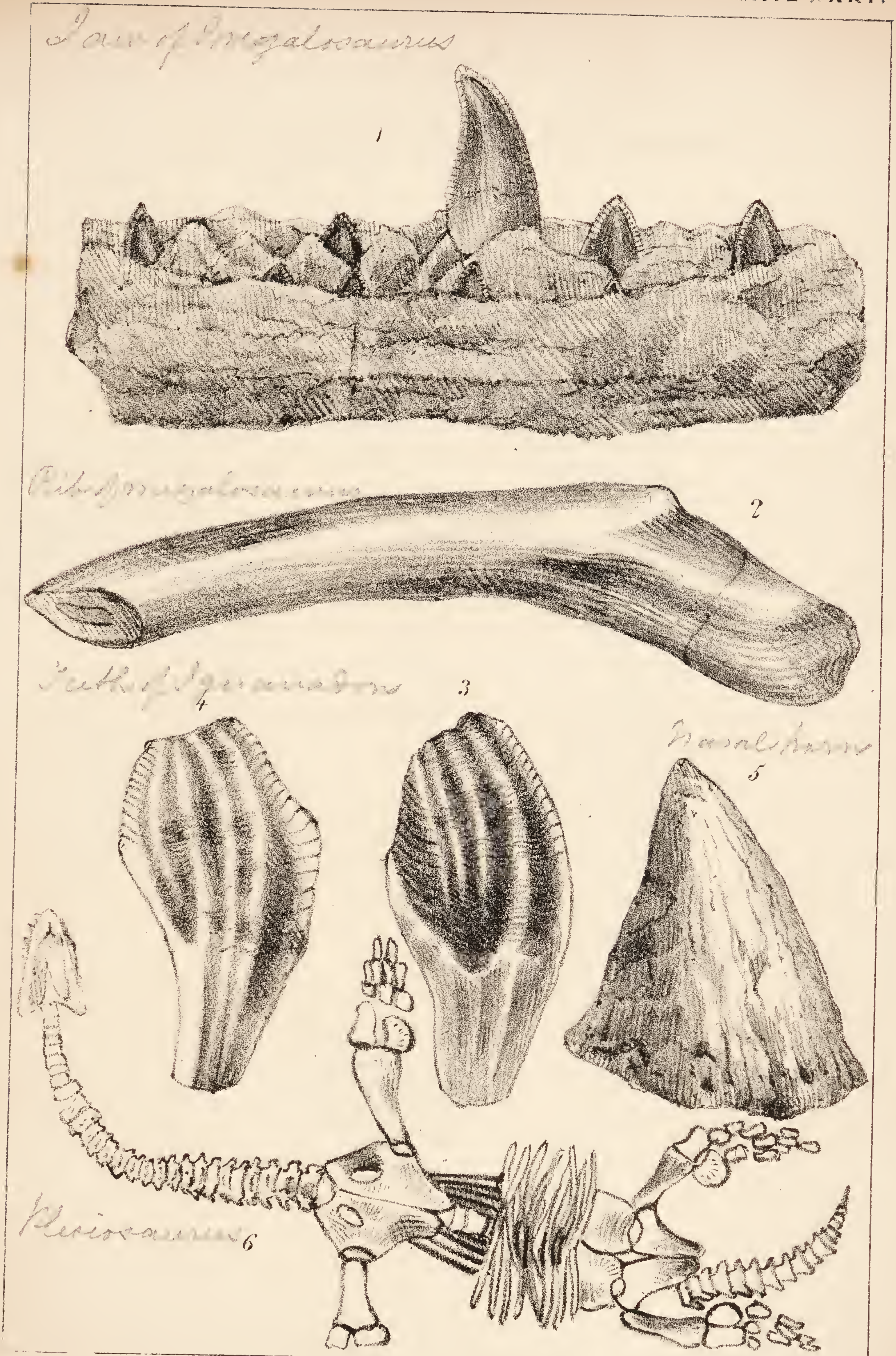
Plate XXXIII.—1, Palæothrissum macrocephalum. 2, Dipterus macropygopterus.

Plate XXXIV—1, Fossil fish—genus not determined. 2, Dipterus brachypygopterus.

References.

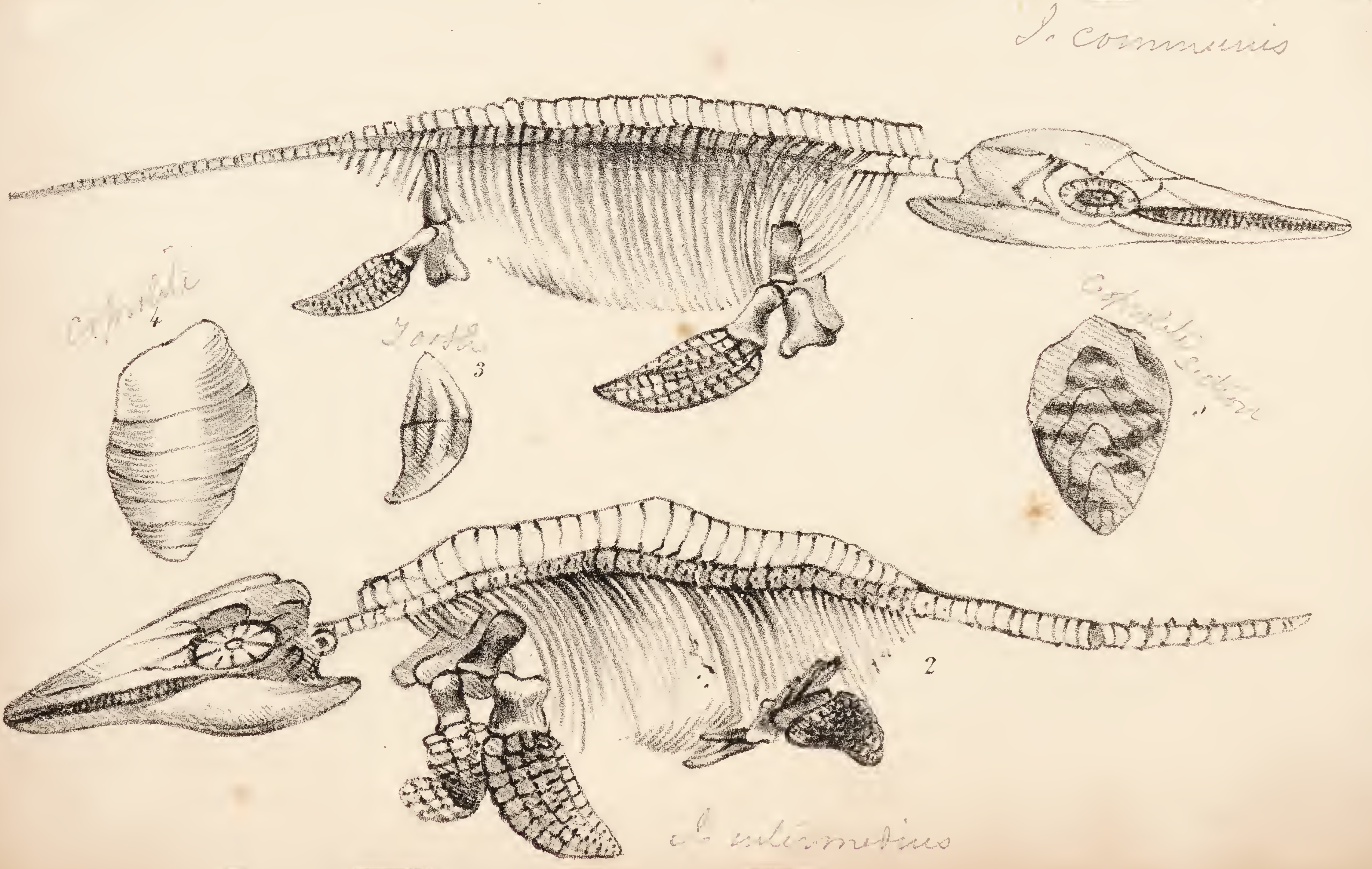
Buckland's Reliquiæ Diluvianœ—Bridgewater Treatise on Geology and Mineralogy.—Buckland on Coprolites—Proc. Geol. Soc. Vol. III, Part I.—Dr. Mantell's Geology of the South Downs.—Woodward's British Fossils.

REPTILIA. PLATE XXXI.



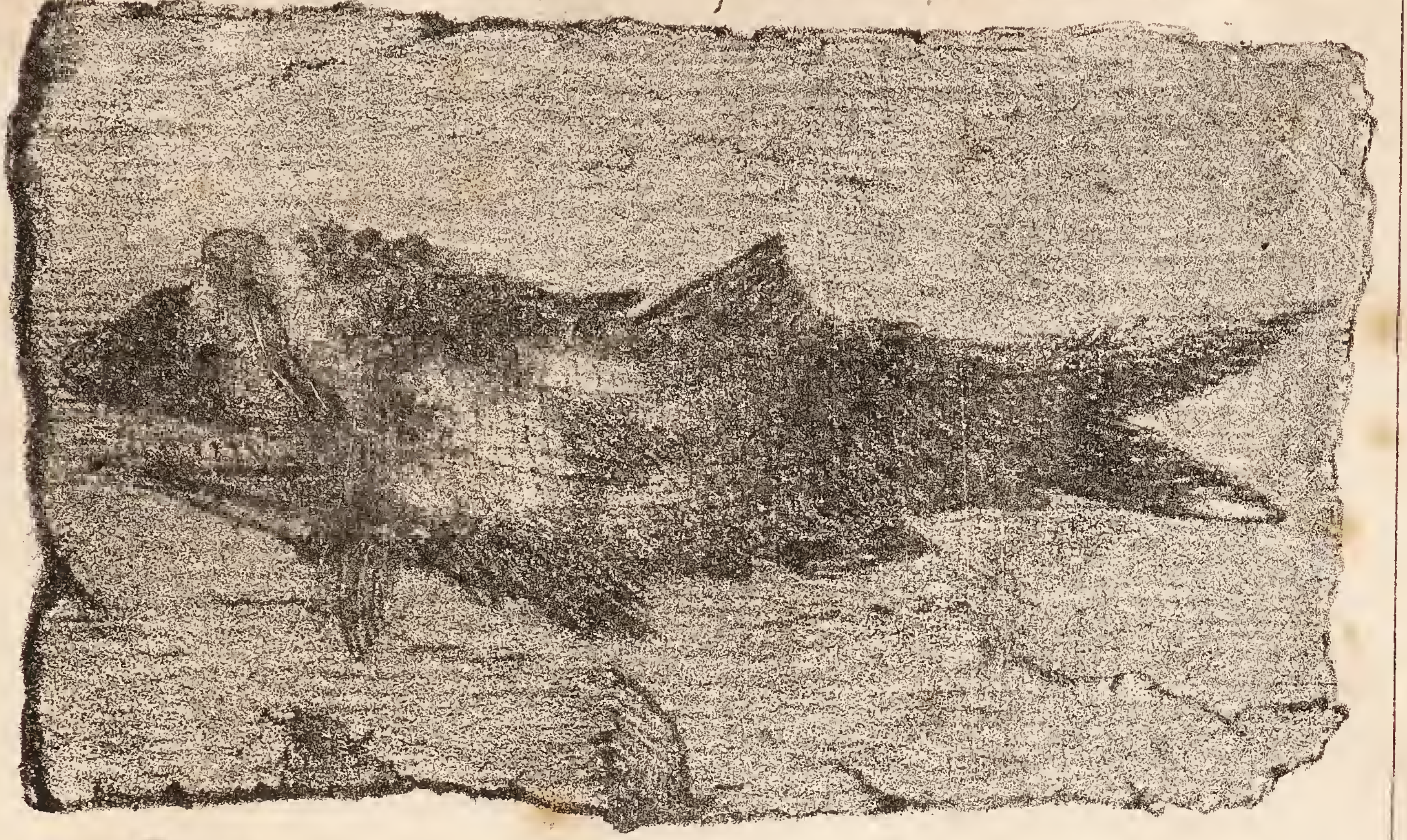
ICHTHYOSAURI.

PLATE XXXII.



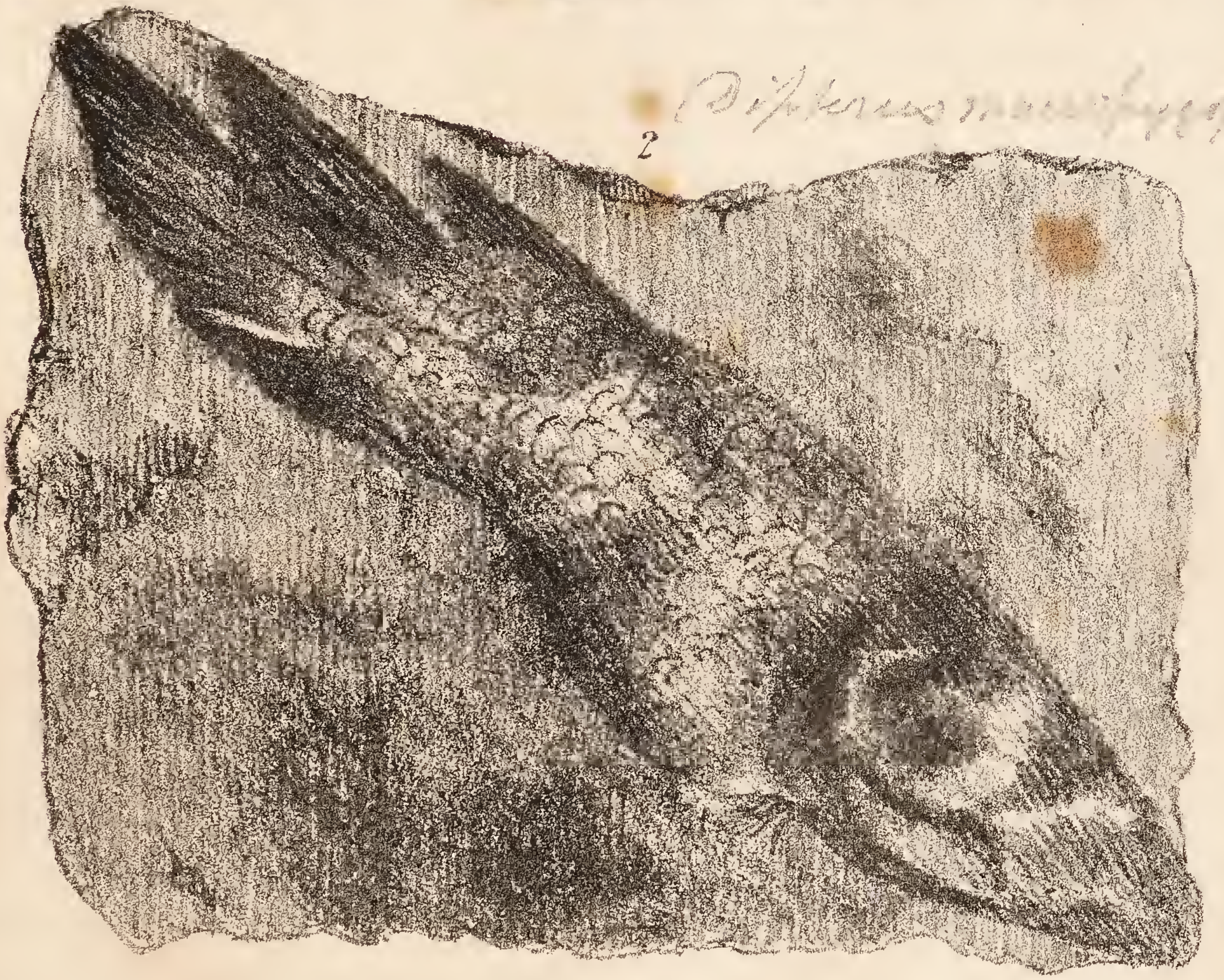
Palaeothrissum macrocephalum

1

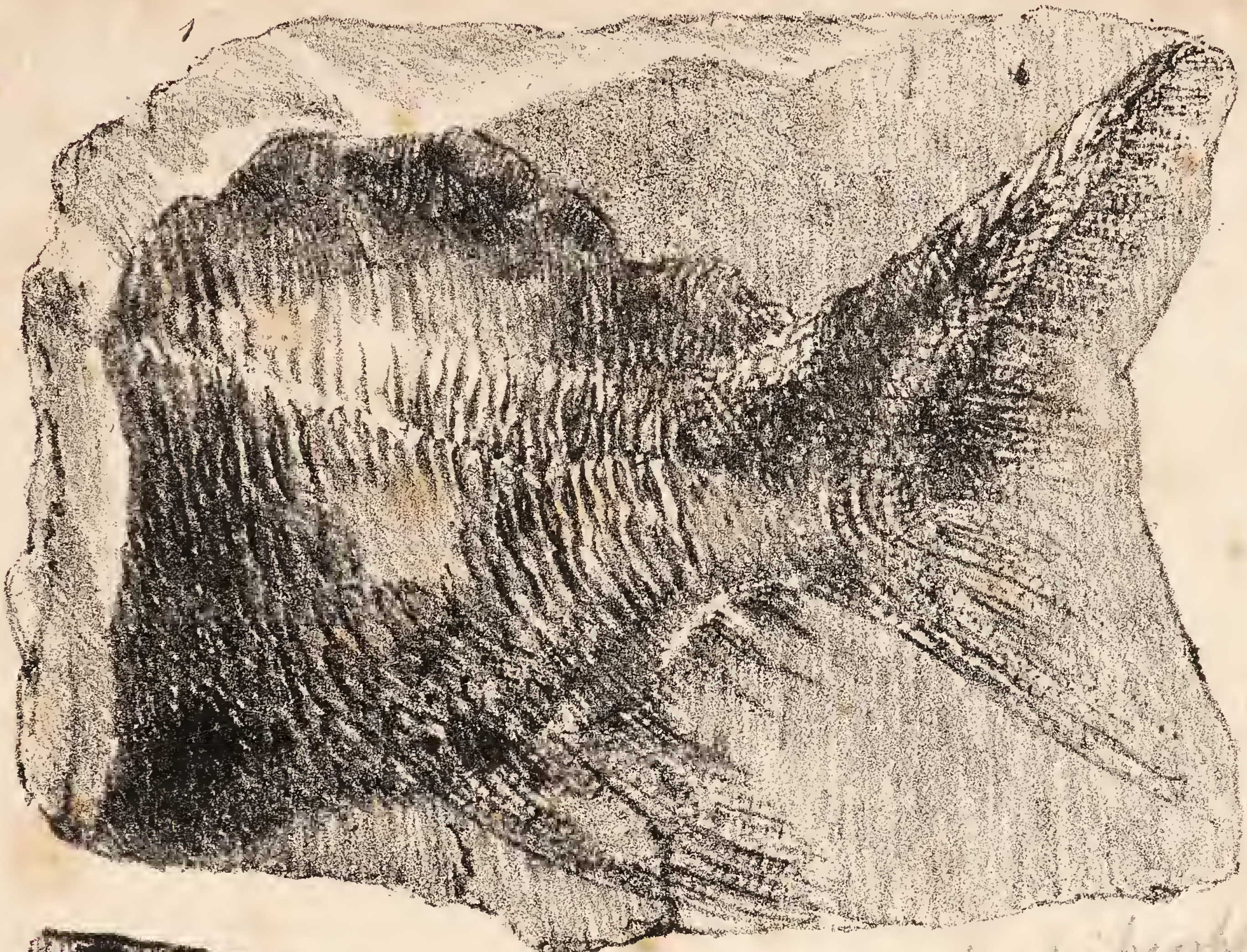


Dipterus macrocephalus

2



1



2 Dipterus brachypterus